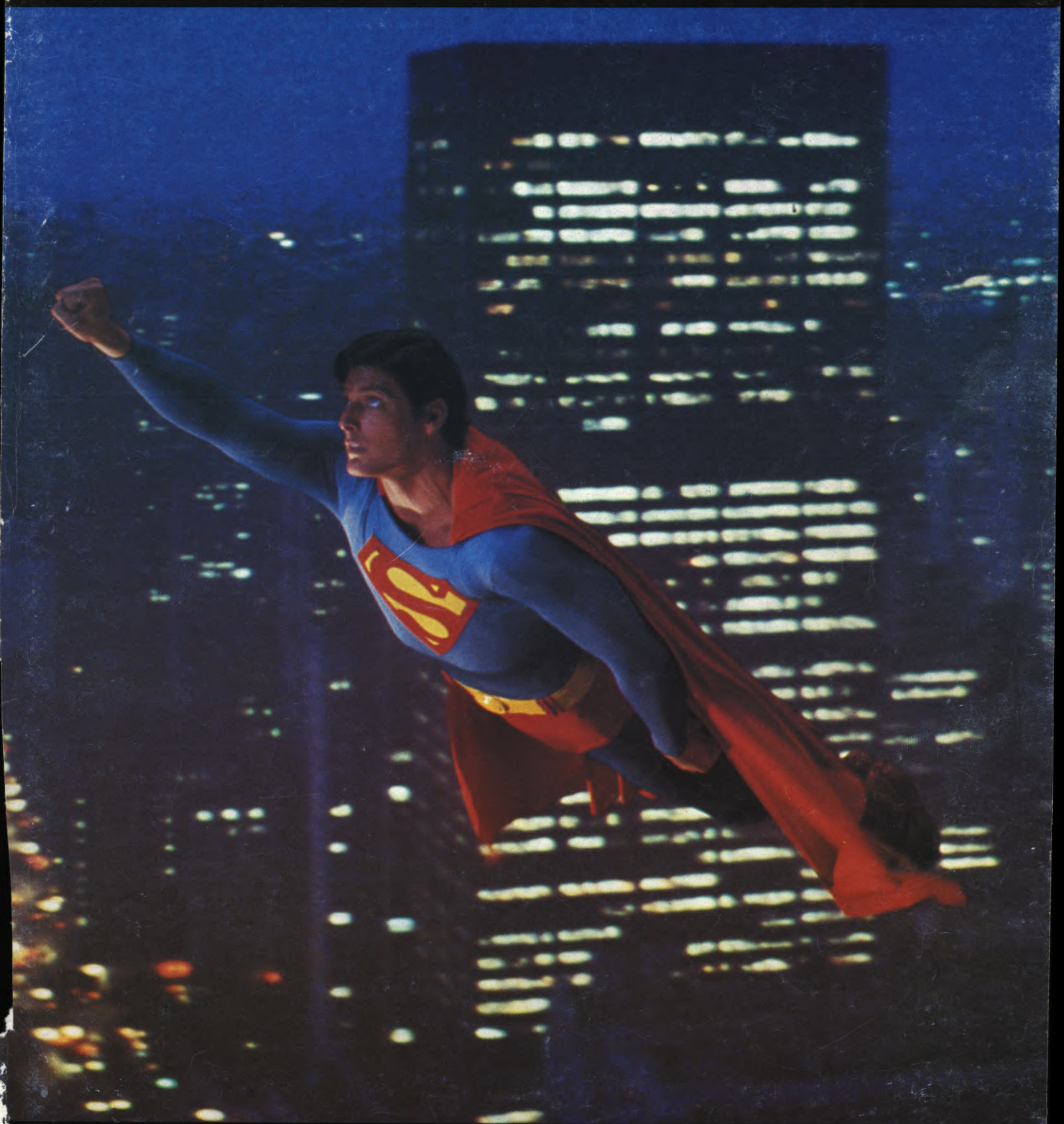
American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

JANUARY 1979/$1.50



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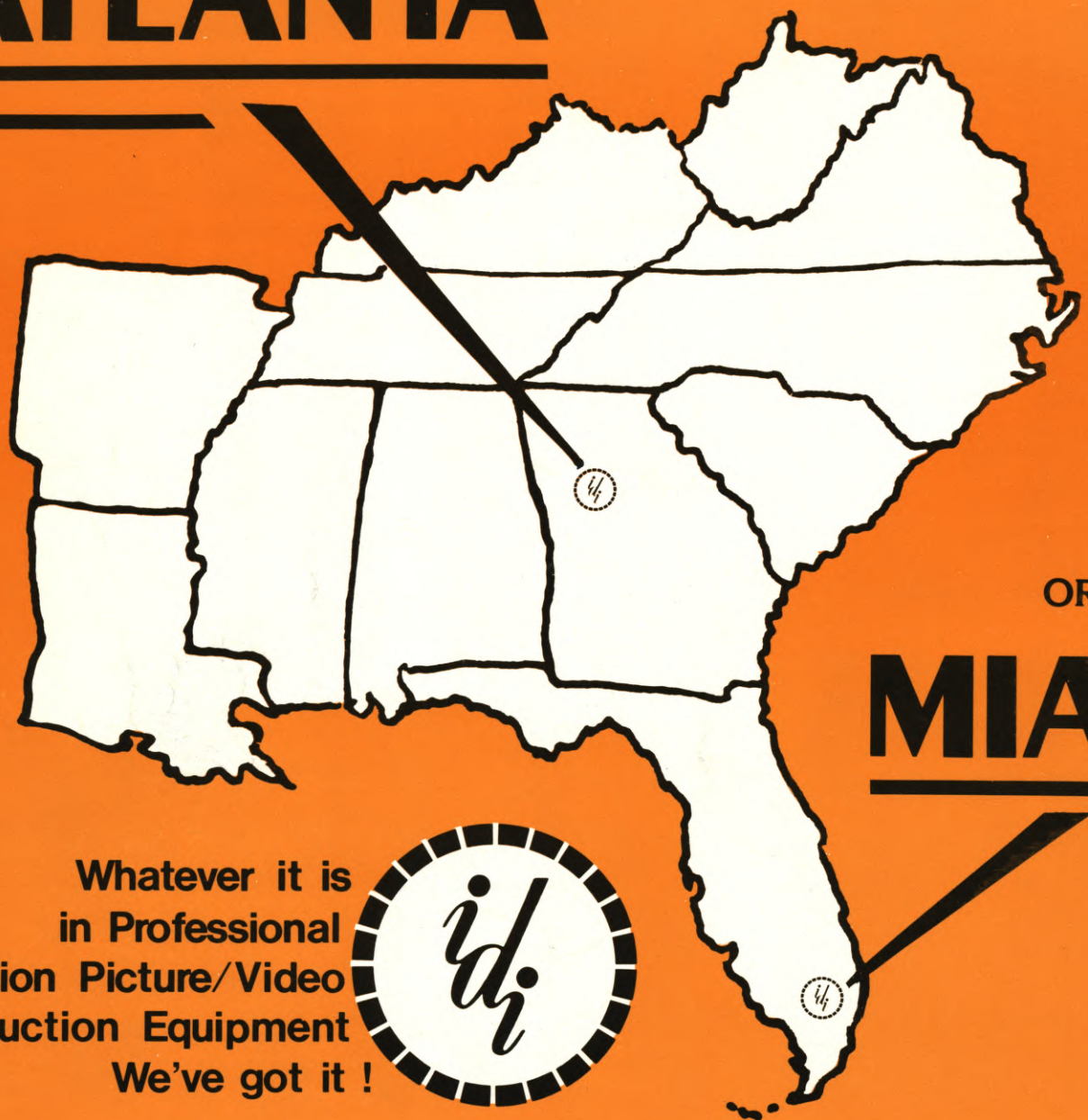

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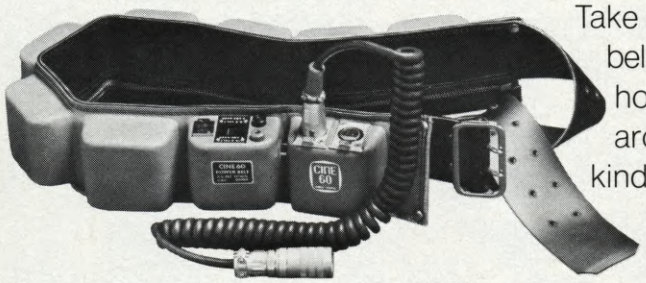

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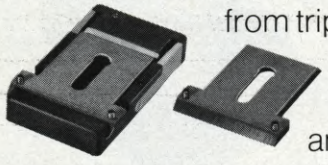

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American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all cinematographers can place the initials A.S.C. after their names. A.S.C. membership has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of prestige and distinction.

JANUARY 1979

VOL. 60, NO. 1

Editorial—Advertising—Business Offices
1782 North Orange Drive
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(213) 876-5080

● FEATURE ARTICLES

● DEPARTMENTS

ON THE COVER: Christopher Reeve, starring in the title role of "SUPERMAN", an Ilya and Alexander Salkind Production for Warner Bros. Release, flies through the air with the greatest of ease—aided by the skill and magic of some of England's foremost film technicians. He is shown flying against a night background of New York, which doubled for the mythical city of Metropolis. Photograph courtesy of Warner Bros.

AMERICAN CINEMATOGRAPHER, established 1920, in 59th year of publication, is published monthly in Hollywood by ASC Holding Corp., 1782 North Orange Drive, Hollywood, California 90028. U.S.A. **SUBSCRIPTIONS:** U.S. $9.00; Canada, foreign, including Pan-American Union, $10.00 a year (remit International Money Order or other exchange payable in U.S.). **ADVERTISING:** rate card on request to Hollywood office. **CHANGE OF ADDRESS:** notify Hollywood office promptly.

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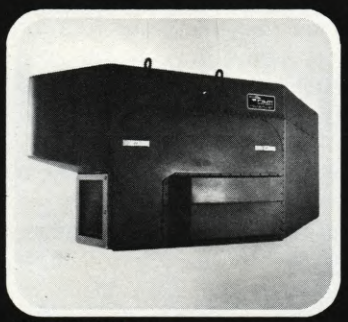

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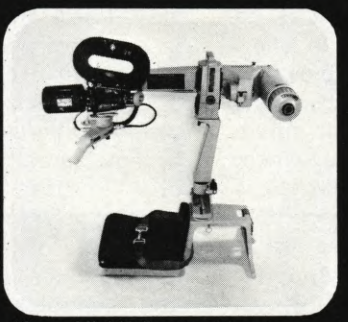

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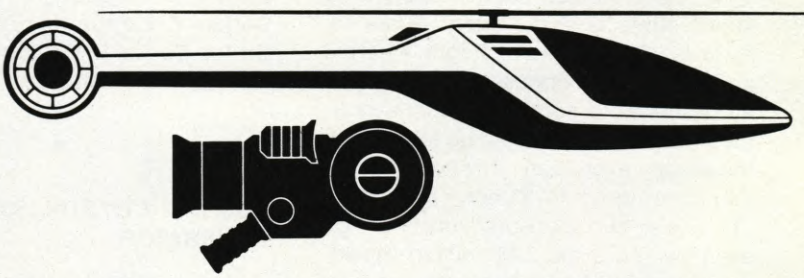

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MODERNCINEMA 35 ANNOUNCED BY MODERN TALKING PICTURE SERVICE

Modern Talking Picture Service has announced the formation of ModernCinema 35, specializing in the distribution of sponsored short subjects, featurettes and program services to motion picture theaters. According to Carl H. Lenz, president of Modern, "ModernCinema 35 is the logical extension of our more than 40 years' experience distributing sponsored films and materials to theaters, community and educational organizations, television stations and CATV systems.

"With the great increase in the number of theater screens and dramatic rise in moviegoing, Modern has the opportunity to be of even greater service to the industry. Theatrical distribution is very specialized, and it must be addressed with imagination and innovation."

Mr. Lenz notes that there is "a definite renewal of interest in short subjects as a program staple. The overwhelmingly favorable response, from both audiences and movie theaters, to the National Endowment for the Arts' Short Film Showcase is one example. Additionally, more than 100 shorts Modern distributes are in considerable demand all over America, and we are playing in some of the best theaters, including the showplace of the nation, Radio City Music Hall."

Mr. Lenz pointed out that sponsored short subjects have won Academy Awards, CINE Golden Eagle Awards, and many other honors. "There is also a considerable number of 16mm non-theatrical films that could be adapted to theatrical exhibition through editing and blowing-up to 35mm," he added. "This year our sponsors' shorts will be seen by more than 75 million moviegoers. Impressive as this audience total is, we think the surface is only being scratched."

ModernCinema 35 is developing plans for the merchandising of shorts to theaters as well as audiences, through promotional and advertising aids, previews for educators and the press, and "packaging" of shorts to complementary feature films. A brochure on ModernCinema 35 will be available shortly from Modern at 2323 New Hyde Park Road, New Hyde Park, New York 11040.

NEW FRESNEL SPOTLIGHT FAMILY INTRODUCED BY BERKEY COLORTRAN

A new family of high-performance fresnels has been introduced by Berkey Colortran, Inc., Division of Berkey Photo, Inc. Called the 1kW, 2kW and 5kW Fresnels, the units represent a new advance in performance and cost in compact, professional lighting equipment, according to Peter T. Coe, Berkey Colortran President.

The units are designed for use in the studio and on location for key, back, and kicker lighting applications. The units employ a new double wall, steel and aluminum construction to provide maximum cooling and a reduction in weight. The Fresnels incorporate new high transmission lenses providing maximum performance capability for all studio and location applications.

The 1kW Fresnel accepts 750 and 1000 watt lamps. The 2kW units accept 1kW, 1.5kW and 2kW lamps. The 5kW unit accepts a 5000 watt, 3200° kelvin, 500 hour ANSI code DPY lamp.

The Fresnels are listed by Underwriters' Laboratories for the maximum acceptable wattage lamp and are available in both stand-mounted and hanging versions.

Berkey Colortran is a major manufacturer of lighting equipment and control systems for theatrical, television, motion picture and still photographic applications. Complete technical literature is available from Berkey Colortran, Inc., 1015 Chestnut Street, Burbank, California 91502; telephone (213) 843-1200.

•

TCS TX-7 CRYSTAL SYNC GENERATOR

Tobin Cinema Systems has announced a new model in its series of crystal sync generators for cordless double-system cinematography. Intended for custom installation inside most pilot or stereo-cassette recorders, the TX-7 measures just 25.4 x 61 mm (1 x 2.4 inches) and is less than 12.7 mm (½-inch) thick.

Output is a 60 Hz sinewave of 1.25 volts rms amplitude, with a calibration accuracy of ± 3 parts per million at 20°C (68°F) and ± 30 parts per million over the operating temperature range of the associated recorder. The output is free of even-order harmonics and contains only 1% of odd-order harmonics, for the minimum audible crosstalk from the pilot track to the audio channel(s).

An AT-cut crystal of 3932.160 kHz is used for high stability. A trimmer adjustment is provided for recalibration if ever required, without need for future circuit modifications. Total current drain is a few milliamperes. Construction is of high commercial grade, with tantalum and monolithic capacitors, carbon film resistors, and a G-10 fiberglass circuit board.

The introduction of the upright/flatbed editing console represents the start of an exciting new chapter in the development efforts of Cinema Products Corporation.

The people at Cinema Products Corporation have expressed the opinion that the introduction of the new U/F-16 upright/flatbed editing console represents an exciting new chapter in the development efforts of their company.

•

ANGENIEUX INTRODUCES VARIABLE PRIME LENS

Ferco headquarters in New York City was the site for the introduction of the new Angenieux variable prime lens for the New York area.

Cameramen from the major networks and production houses viewed the new Angenieux 2.8x16B, 16-44mm, T/1.3. A true zoom lens, dubbed the variable prime, because of its exceptional image quality and normal focal length range. For the first time in the 16mm field, a zoom lens has been made available of this quality that will readily allow blow-ups to 35mm.

With a constant maximum aperture of T/1.3, the new zoom provides the highest image quality, equivalent to the finest fixed focal length lenses under extremely low ambient light conditions (5 foot-candles).

The visitors to Ferco were shown the new 2.8x16B variable prime on a number of professional 16mm cameras. To make the lens more flexible, two front mounted attachments were also demonstrated. The retrozoom or wide angle attachment changes the focal length to 12-34mm while only changing the photometric aperture to T/1.4. On the other hand, the front mounted tele-attachment changes the focal length to 52-74mm with the same T/1.4 aperture.

Angenieux has stated that limited production on this lens will begin within 30 days, with full production slated for the Fall. The new lens is to be available in all professional mounts: Arriflex, Cinema Products, Eclair, Frezzolini, etc. ■

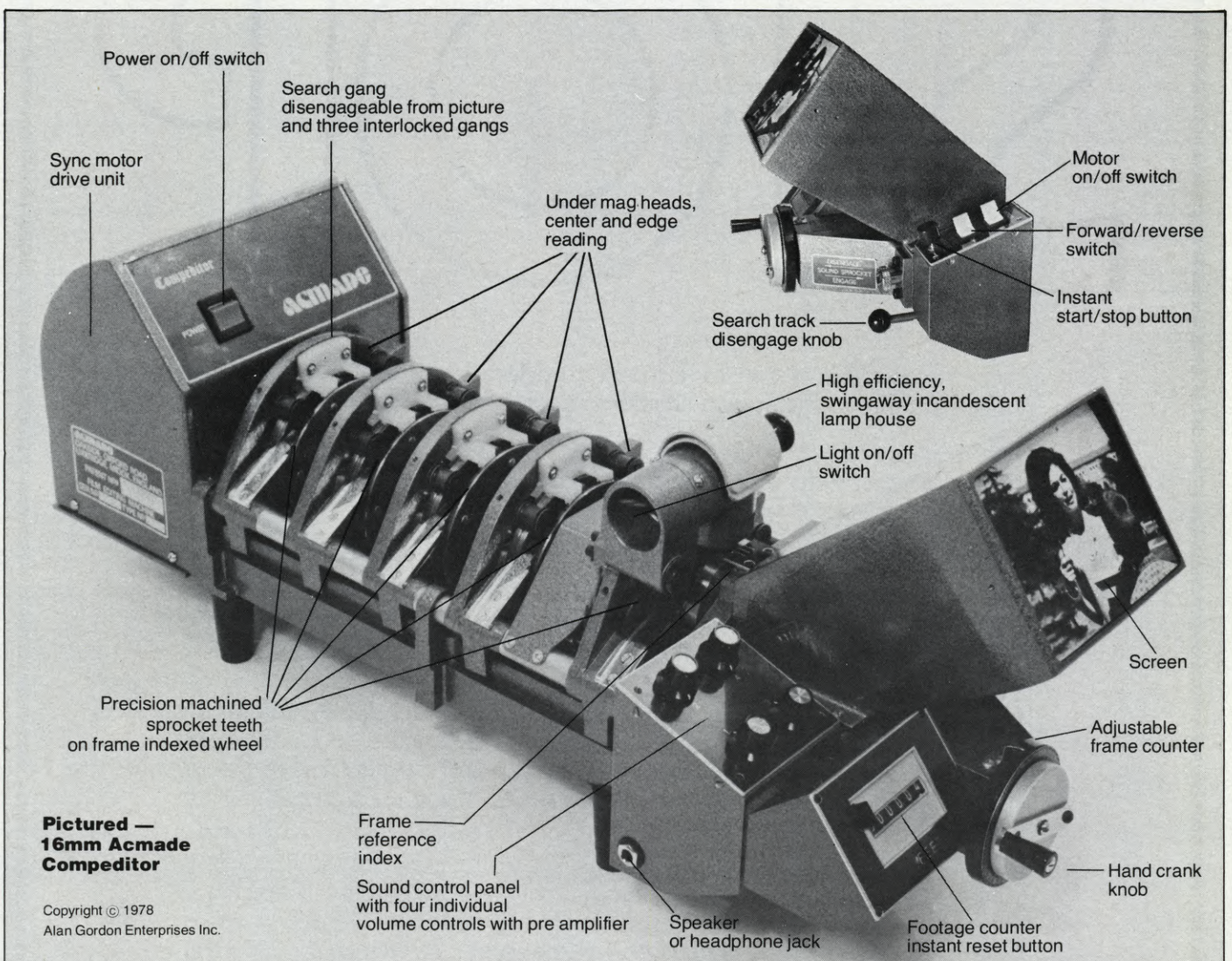
ACMADE Compeditor

The Acmade Compeditor, available in both 16mm and 35mm models, was designed for the working film editor. It is a compact, table-top editor which combines a four-gang synchronizer, under mag sound heads, pre-amplifier, large screen viewer and synchronous motor into an efficient, one-unit editing machine.

Featuring both motorized and hand-cranked operation, the Acmade Compeditor allows an editor to sync dailies, assemble scenes and split and lay tracks faster than any other editing machine on the market. It is ideal as a complete editing system or as a companion to a flatbed editing machine. The Acmade, when being used for the first or rough cut, doubles editing manpower by freeing the flatbed editor for fine cutting.

Extremely easy to operate because of its compact design and physical layout, the Acmade has a simple threading pattern and easy-to-reach controls. Quick access to all its operating features make the Acmade ideal when speed and efficiency is desired in film editing.

Why not put the Acmade Compeditor to work for you today? Check with us for additional information and prices.



Pictured — 16mm Acmade Compeditor

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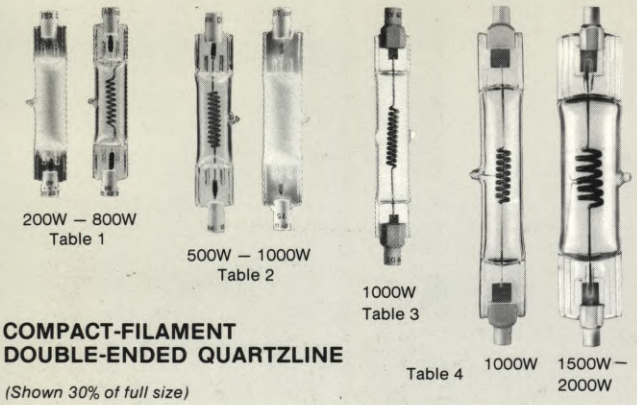

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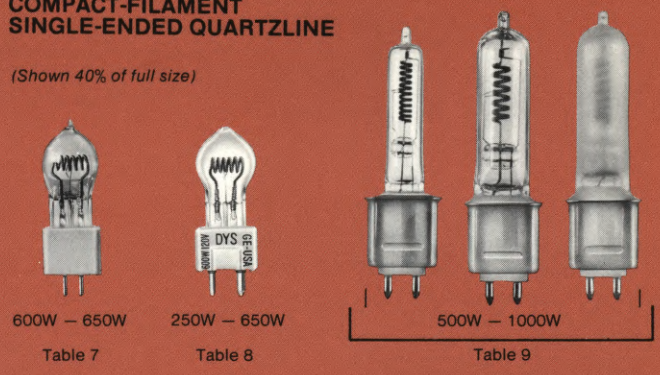

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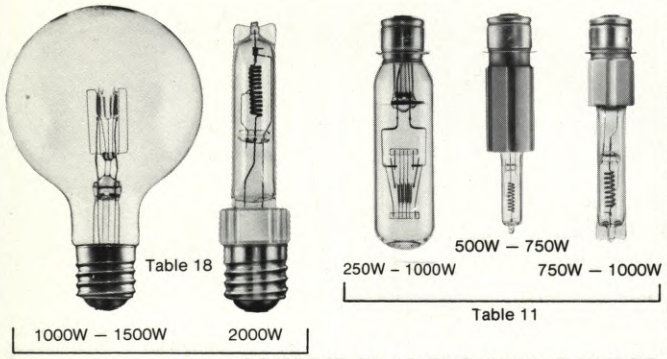

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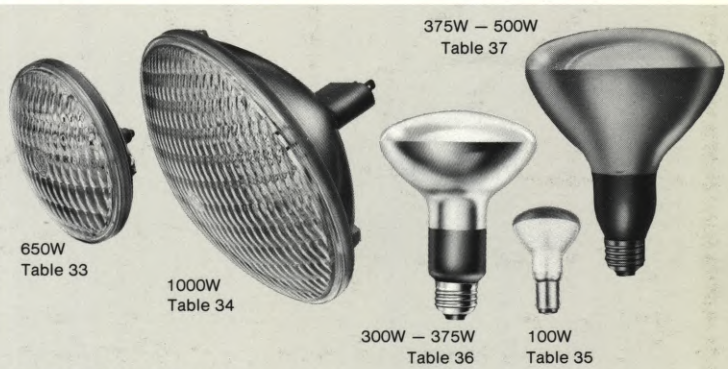

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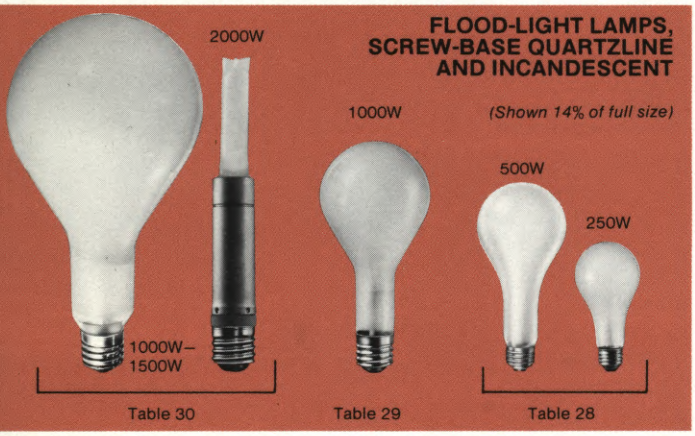

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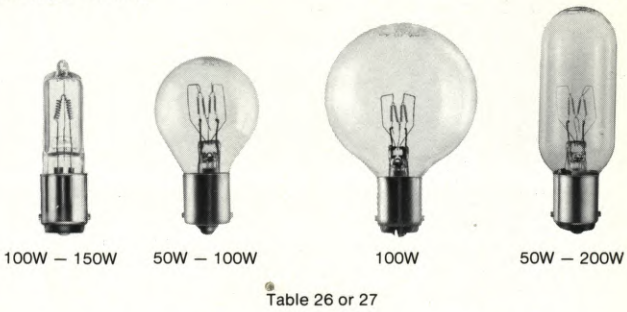

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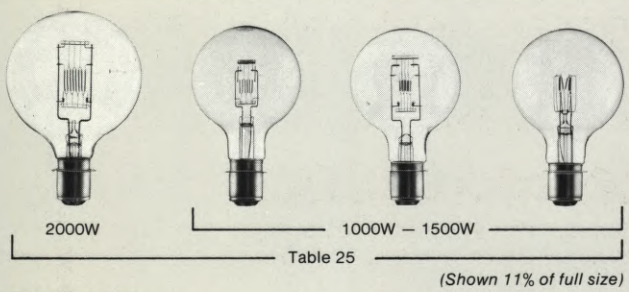

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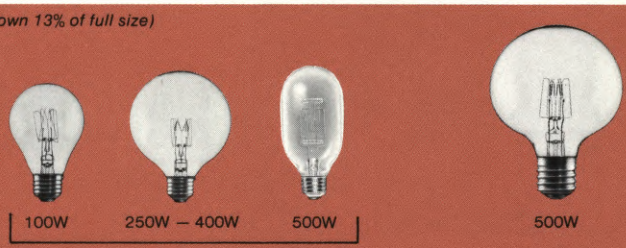

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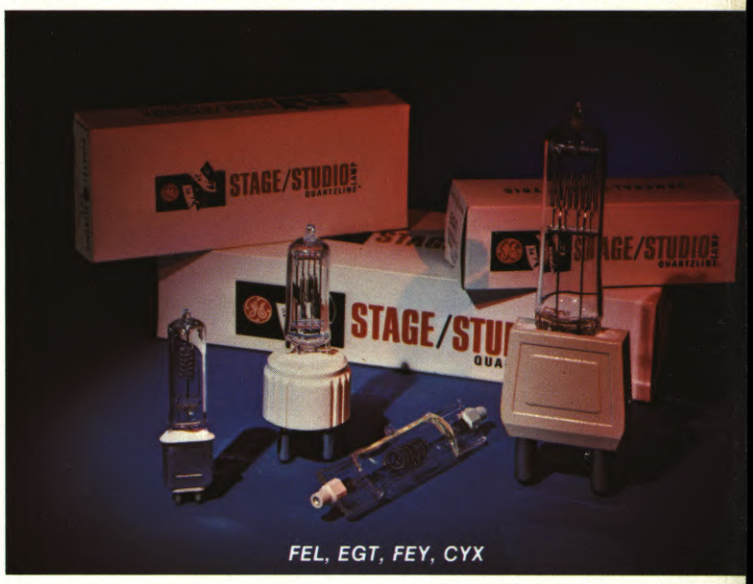

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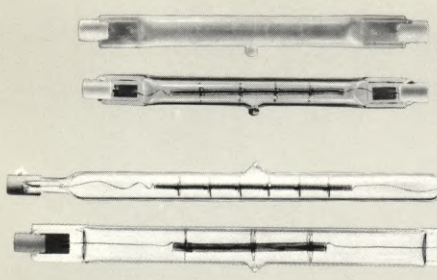

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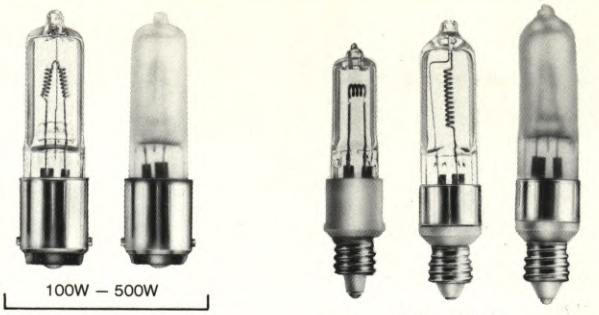

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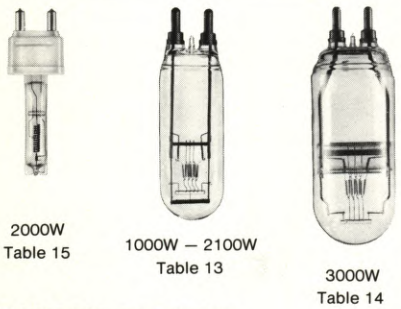

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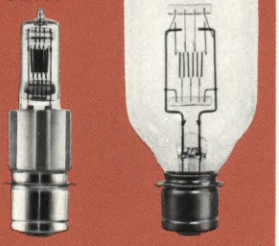

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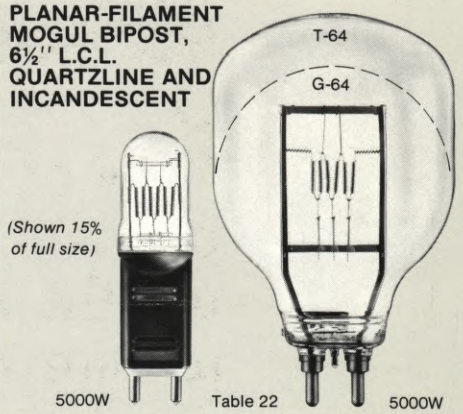

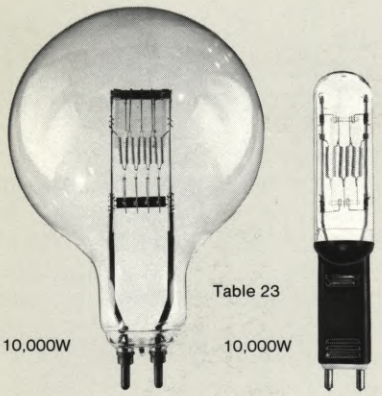

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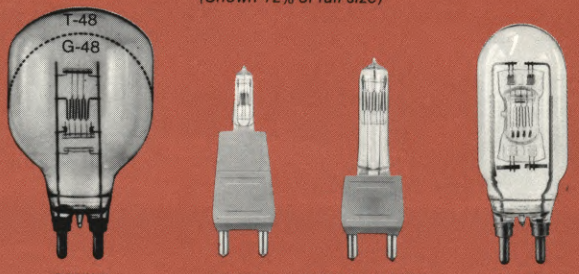

PLANAR-FILAMENT, MOGUL BIPOST, 5" L.C.L. QUARTZLINE AND INCANDESCENT

INCANDESCENT LAMPS FOR FOLLOW-SPOTS AND EFFECTS PROJECTORS

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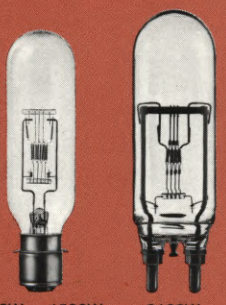

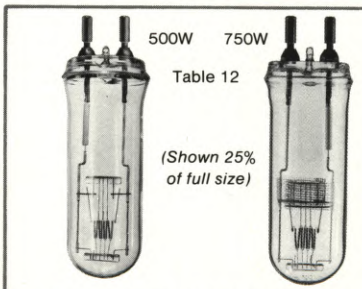

COMPACT-FILAMENT, SINGLE-ENDED MEDIUM BIPOST 4" L.C.L. INCANDESCENT

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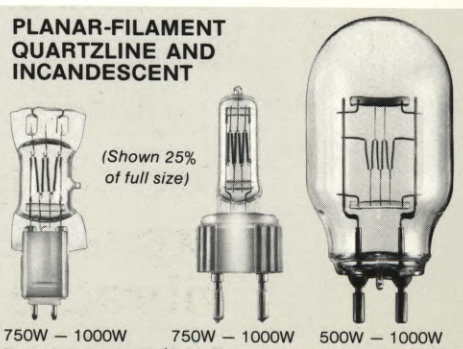
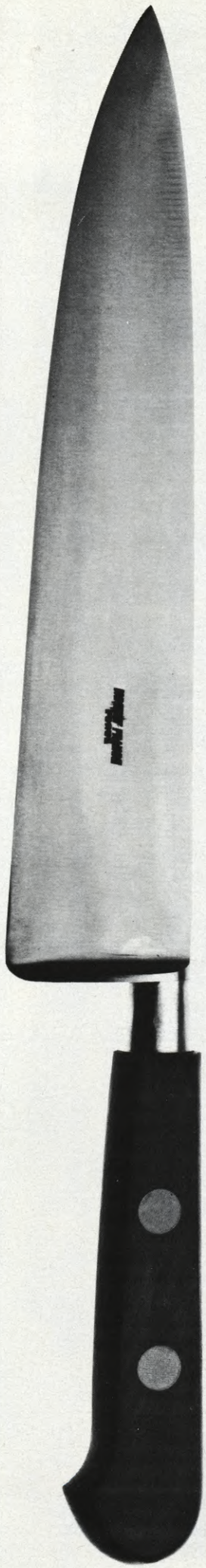


NOVEMBER 1978

LIGHTING DIMENSIONS

Q :
Why do so many people in Sweden* use the Aäton camera to film 16 mm for 35 blow-up?
A :
Because the image is so sharp.
Q :
Why is it so sharp?
A :
Because the Aäton has a very long and twistless loop. No breathing during exposure. No vibrations. Absolute steadiness.

(* The birthplace of Super 16)



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QUESTIONS & ANSWERS

Conducted by CHARLES G. CLARKE, ASC. and WINTON HOCH, ASC.

(Inquiries are invited relating to cinematographic problems. Address: Q. & A., AMERICAN CINEMATOGRAPHER, P.O. Box 2230, Hollywood, Calif. 90028.)

Q In part three of question one in the September, 1978 issue of AMERICAN CINEMATOGRAPHER you were asked about the old Wall and Mitchell 35mm single-system optical cameras. The question was about projection sync. This was one of the many answers we received.

A According to the specifications of the Wall camera (designation A-9), it is constructed so that the sound track "leads" the picture by 11 frames or 44 sprocket holes. Reversal film exposed by this camera would not be in proper projection position after developing, as it would require a nine-frame advance in the printing to make this possible.

In the instance of a 35mm Mitchell camera, factory specifications indicate that the distance between the center of the picture and corresponding sound is 20 frames, or correct projection distance. If measurements were taken from the bottom of the camera aperture in either the Wall or the Mitchell, one-half frame distance would have to be added.

To use the single-system designation isn't necessarily correct, as the Mitchell Camera Company put out an "SS" designated single-system camera for military use that differed from a standard "NC" Mitchell for which a galvanometer was added after the camera was built so it could be used for sound work, but the galvanometer in the "SS" was standard equipment, original manufacture.

One other bit of news for what it might be worth. The term "Movietone News" was strictly a Fox term. They didn't use a Wall camera.

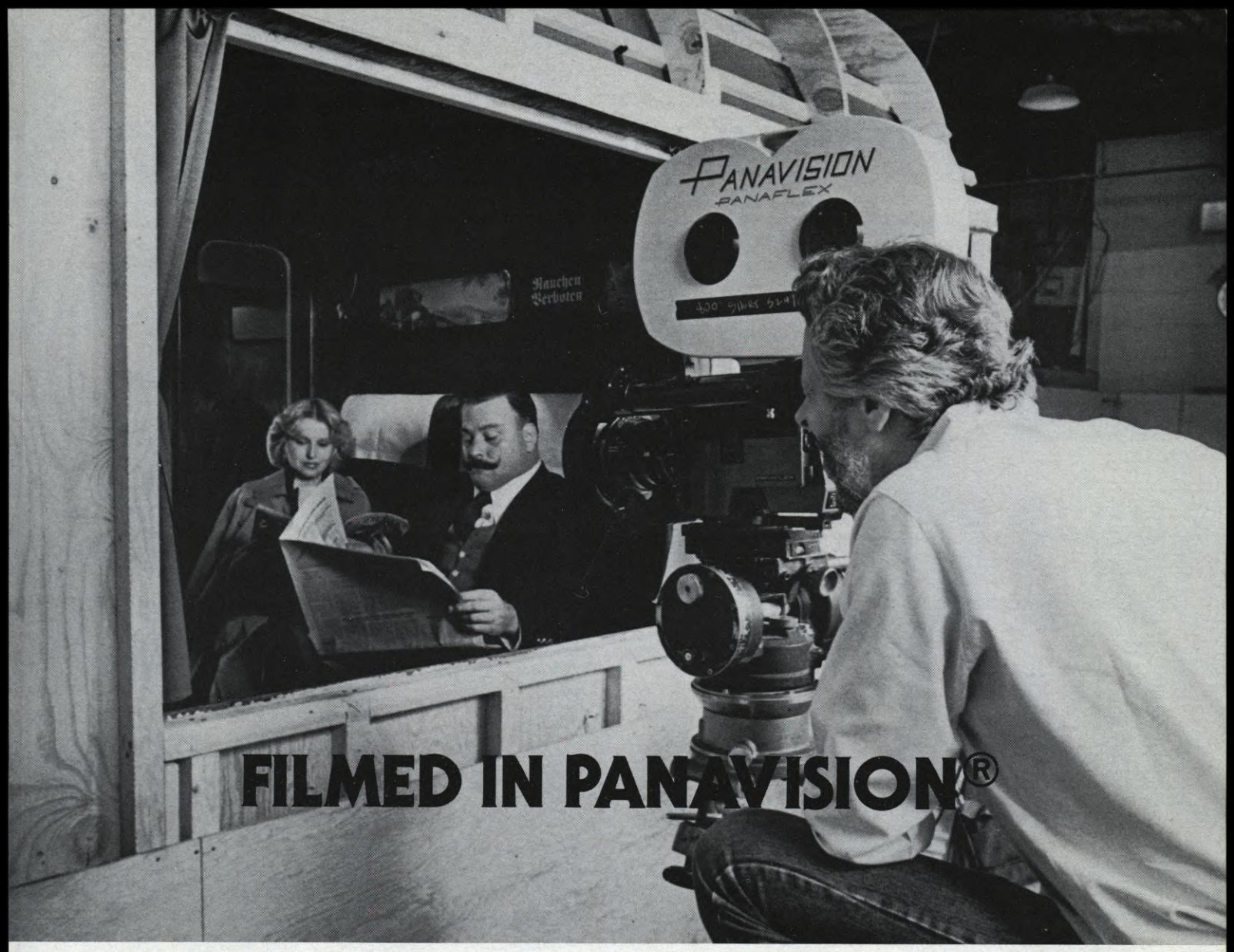
Kemp R. Niver

Q Please answer an inquiry concerning matching post-flashed VNF with ECO. There has been much talk about the improvements that 7240 and 7239 have over 7242 and 7241. In the past, when a production called for night shots, or uncontrolled lighting shots where the standard film used was ECO, a post-flashed 7242 or 7241 was used for that sequence (though not intercut in the same sequence). The VNF films, and now the 7250 or ASA 400 have been highly recommended for good results on TV. Would you recommend using them for 16mm release print end product-type of productions not necessarily made for TV?

A The new VNF films that you mention represent another step forward in the technology of film manufacturing. They can be post-flashed to reduce contrast in the same way that the older films can be. Similarly, they can be forced in development to enhance their speed rating.

In regard to the ultra high-speed film, we recommend that it can be used successfully when needed. It is good photographic policy to employ films whose speed ratings are appropriate for the individual circumstances. In other words, you can obtain a better quality image by using slower films if the lighting conditions are favorable.

Sid Solow



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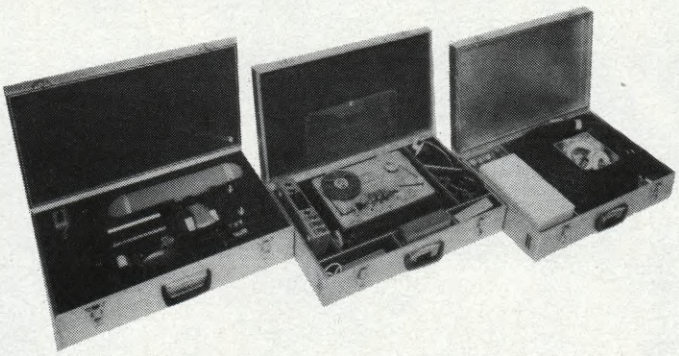
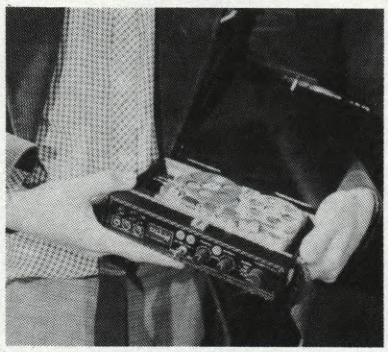


The Nagra IVS outfit



The Nagra SN

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INDUSTRY ACTIVITIES

CHICAGO FILM FESTIVAL '78 ATTRACTS MORE THAN 90,000 FANS, STAGES MOST AMBITIOUS PROGRAM

Delegations from more than 11 countries came to Chicago for the 14th Annual Chicago International Film Festival, held November 3-21, 1978. Two extra days—11 extra performances—were added to the Festival programming, as a result of lively interest in this year's line-up. Nearly 30% of the regularly scheduled performances sold out and all four theaters had near-capacity crowds for most shows. Highpoints of the Festival included the following:

132 separate film events in four theatres

36 participating countries in 10 separate categories

62 new feature films

37 United States premiere feature films

27 in-person discussions with filmmakers

Orson Welles Retrospective FREE

47 free shows: documentaries, educational films, student films, and television productions

21 Senior Citizens programs

9 youth multimedia programs

The Festival's Governing Board Chairman, Ray Nordstrand, describes this year's event as "The best ever . . . total box office was 20% ahead of last year, total attendance was 10,000 ahead of last year. The average patron saw 4.3 films during the 19 day event. The Festival operated in the black and eliminated the majority of its year-round accumulated deficit."

SPAIN AND HUNGARY TAKE TOP AWARDS

Two films shared top honors in the feature film competition: Grand Prix Golden Hugo for Best Feature Film in the 14th Chicago International Film Festival was awarded to Jaime Chavarri's haunting TO AN UNKNOWN GOD. Special Jury Prize Golden Hugo was given to the Hungarian documentary A QUITE ORDINARY LIFE, by Imre Gyongyossy and Barna Kabay.

SILVER AND BRONZE HUGOS AWARDED

A Silver Hugo went to KINGDOM OF NAPLES, from Germany, directed by Werner Schroeter. The Silver Hugo for Best First Feature Film in the Festival was awarded to IDLERS OF THE FERTILE VALLEY, a Greek film directed by Nikos Panayotopoulos.

A Bronze Hugo went to Bill Douglas' MY WAY HOME (England), "for its mastery of personal expression in the cinema." MEETINGS WITH ANNA (France) by Chantal Akerman also received a Bronze Hugo, "for the originality of her vision."

WINNERS IN OTHER CATEGORIES

Grand Prix Golden Hugo winners in other categories were: THE SOUTH AFRICAN EXPERIENCE, ATV Network London, for TV Productions; MAIDENS, Jeni Thornley, Australian Film Commission, Short Subject; RIP VAN WINKLE, (U.S.A.) Will Vinton Productions, Animation; and A FAMILY IS . . . (U.S.A.) McDonald's, for TV Commercials. In the Student Category, Grand Prix Golden Hugos went to: FURIES, by Sara Petty/Creative Film Society (U.S.A.) and AMERICANO, by Dwight Little, University of Southern California, both graduate student entries. A Golden Hugo was won by A STATE OF SIEGE, by Timothy White, New Zealand Film Commission, in the undergraduate entries.

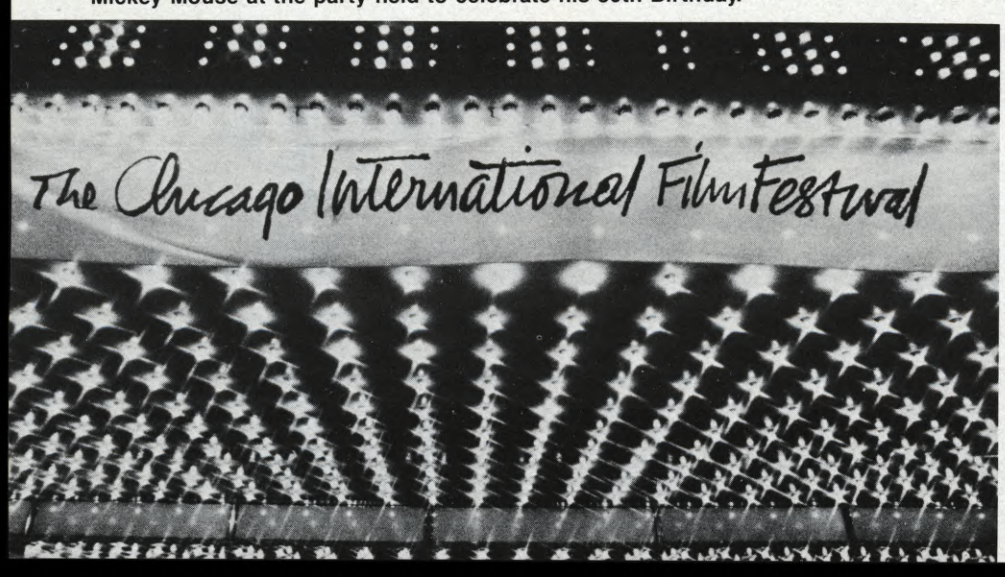
Silver Hugos in the Documentary category went to AMATEUR NIGHT AT CITY HALL, by Trombert-Mugge Productions Inc., and to MORGAN'S WALL, Liberation Films, London. A Silver Hugo was by HOW THE MYTH WAS MADE, produced by George C. Stoney Associates, in the Educational category. NBC Television was the winner of a Silver Hugo for KING, in the Television Production category.

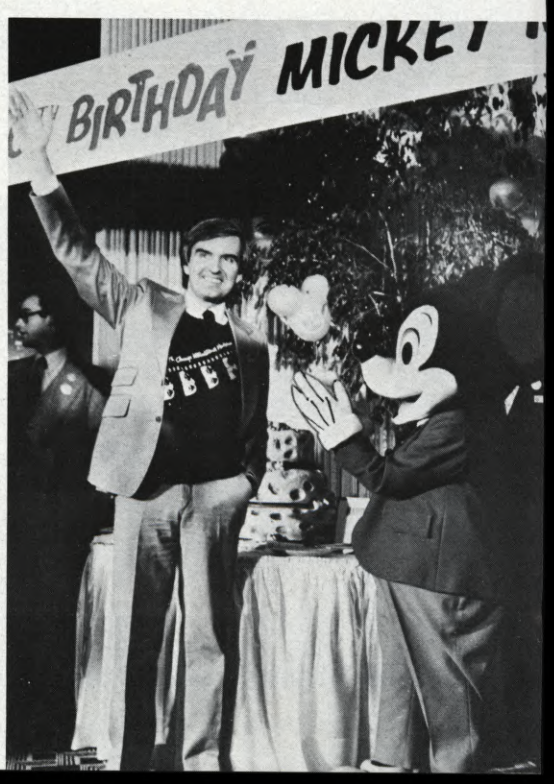
SPECIAL AWARDS

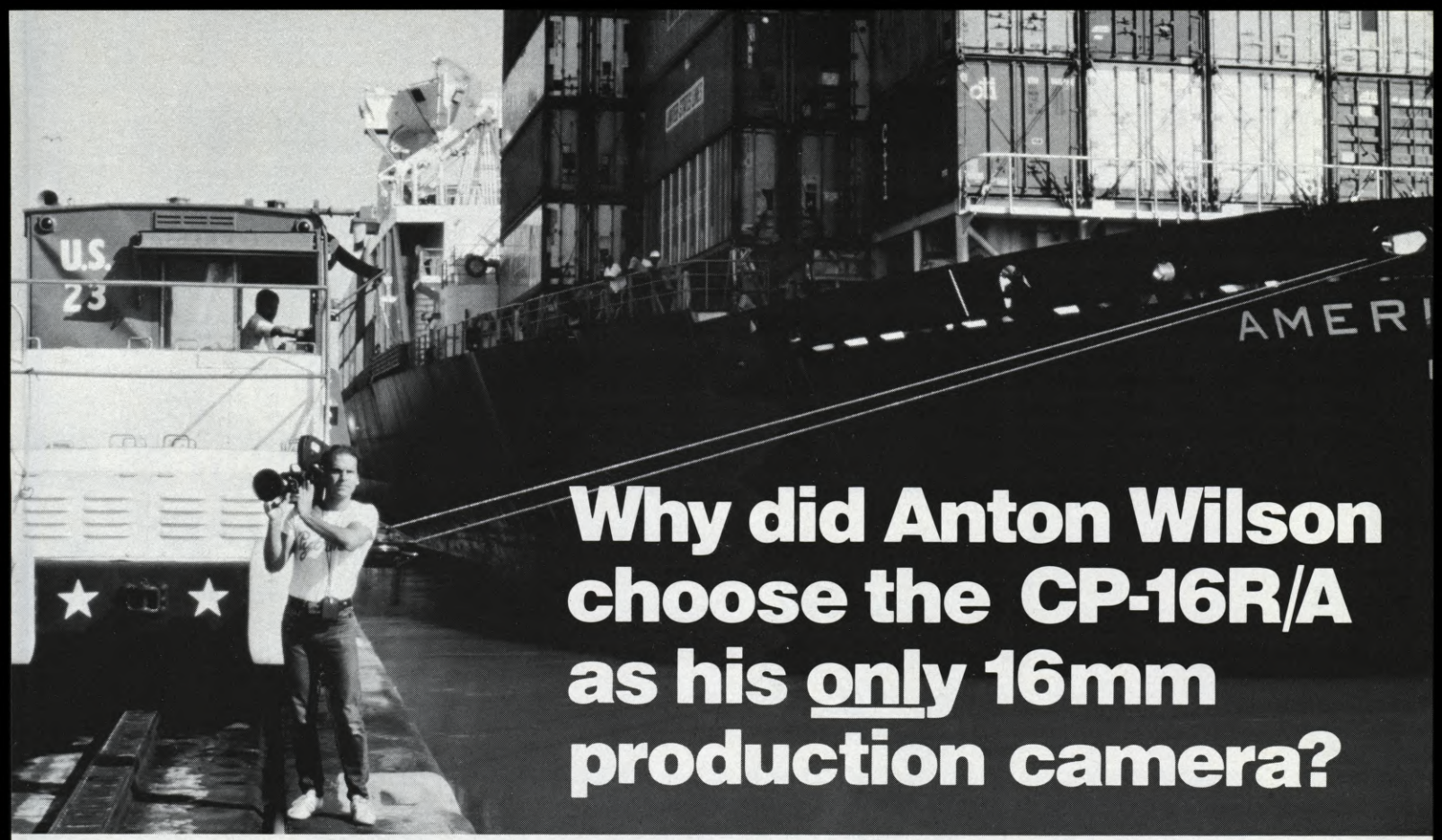
The first annual Zelimir Matko Award was presented this year, to METAMORPHOSIS OF MR. SAMSA, entered by Caroline Leaf/National Film Board of Canada. This is a special commemorative plaque in memory of the man who created Zagreb Film. The Audience Prize, for the most popular entry in this year's Festival, went to HARDWARE WARS, by Ernie Fosselius and Michael Wiese, entered by Pyramid Films in the Short Subject category. This prize is a

Continued on Page 99

The 14th Annual Chicago International Film Festival was a gala affair, as symbolized by the glittering theater marquee below. Delegations from more than 11 countries traveled to the Windy City to attend the Festival, which added two days and 11 extra performances to its programming. During the 19-day event, nearly 30% of the regularly scheduled performances sold out and all four theaters had near-capacity crowds for most shows. Total box office was 20% ahead of last year and total attendance was 10,000 ahead of last year. (RIGHT) Michael J. Kutza, Jr., Founder and Director of the Chicago Film Festival, greets Mickey Mouse at the party held to celebrate his 50th Birthday.







Why did Anton Wilson choose the CP-16R/A as his only 16mm production camera?

Known for his daring and inventive camera work, independent producer/cinematographer Anton Wilson has done it all: documentaries, special feature stories for television, industrials ... most notably for ABC-TV's *Good Morning, America* and for industrial giants like AT&T, among others.

A former technical director for Arriflex, with a background in mechanical engineering, Wilson is also an authority on motion picture production techniques and equipment design. He is vice-president of Anton-Bauer, manufacturers of power supplies for film and video use, and a contributing editor to the *American Cinematographer* magazine.

"The quietest 16mm camera I've ever owned."

"I first started out with an Arri 16BL, followed by an Eclair ACL," says Wilson. "Eventually I gave them both up. For various reasons, they just failed to satisfy my particular filming requirements.

"My assignments are so diversified and challenging, I need a versatile production camera that can do just about *everything!* And I find that the CP-16R/A is the only camera in existence versatile enough to do everything I want — and need — it to do. Best of all ... it is the quietest 16mm camera I've ever owned."

"CP-16R/A is the only game in town!"

"The studio-silent CP-16R/A is ideal for all double system work. Yet it is lightweight, compact, and has all the sophisticated features and accessories I consider indispensable: variable speeds, behind-the-lens metering, orientable viewfinder... you name it.

"Most important, the CP-16R/A also has a high-quality single system sound capability that is integral to its original design — not a modification, or an afterthought.

"When I add it all up: CP-16R/A is the only game in town!"

Modern production techniques require high-quality single and double system sound.

Says Wilson: "Single system capability is essential these days for most documentary, industrial and PR films, as well as TV commercials. Because modern production techniques frequently call for the editing to be done on videotape, and single system sound makes video transfer real easy.

"That's why my CP-16R/A is frequently used much like a remote video camera ... but with far greater flexibility and superior results. Production costs in the field are cut dramatically, and we are far less conspicuous and obtrusive than any EFP crew would be.

"Occasionally, we want the quality of double system sound *as well as* single system sound backup and editing ease. So we shoot both ways *simultaneously,* running an additional feed from the mixer into the CP-16R/A built-in amplifier, and recording single system sound on striped film. Incidentally, on a recent documentary shot this way, the single system sound quality was so outstanding that we never even used the sound from the Nagra tape!"

(Above) *Anton Wilson at the Panama Canal. "Filming an in-depth feature story about the upcoming canal treaty and its implications, we were able to move fast and reliably with the CP-16R/A, covering what would normally take two months in just ten days!*

"The camera functioned flawlessly, even in the torrential rain that overtook us when we followed General Torrijos into the Panamanian jungles.

"This documentary was so successful it aired both as a two-part series on Good Morning, America *and as a five-part series on the* ABC Evening News."

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"TVC's attention to my dailies made me feel secure and confident, despite the fact that they were over 2,500 miles away."

RIC WAITE

"My introduction to TVC was during the making of "Huey Long, the Life and Assassination of the Kingfish," for which I received an Emmy nomination this year. I was so impressed with their work and their Chem-Tone process, it was a natural choice to select them for Ralph Waite's "On The Nickel."

I was frequently forced to shoot by available light that could only have been handled by Chem-Tone. Usually when forcing 5247 a full stop, to an ASA of 250 or more, there is a loss of shadow detail and an increase in contrast. With Chem-Tone the shadow details are preserved and the contrast held to a minimum with no increase in grain.

"I particularly like using Chem-tone for contrasty day exteriors where the chemical technique compresses the contrast range without the necessity of using filters.

"TVC's attention to my dailies made me feel secure and confident, despite the fact that they were over 2,500 miles away. I believe this was a first where a film shot entirely in Los Angeles, where there is a plethora of good labs, sent its film to New York for processing. In itself a great statement for TVC and its people."

Ric Waite
Director of Photography, "On the Nickel"
Hollywood, California

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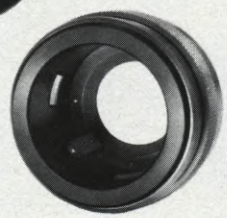
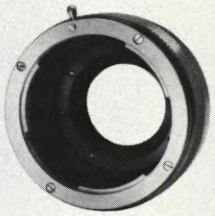
2901 CA-1

1906 Arri bayonet to CA-1



2902 Arri standard



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THE BOOKSHELF

By GEORGE L. GEORGE

GENRES AND TECHNIQUES

An in-depth study of ten leading filmmakers of Japan, Audie Bock's JAPANESE FILM DIRECTORS offers an impressive and scholarly evaluation of their careers and cinematic styles as related to the progress of the country's historic motion picture development (Kodansha/Harper & Row $14.95).

Commemorating the Disney Studios' 50th anniversary are the paperback versions of Leonard Maltin's THE DISNEY FILMS, a solidly documented updated volume (Popular Library $2.25) and MICKEY MOUSE: 50 HAPPY YEARS, edited by David Bain and Bruce Harris, a colorful anthology of the best in Mickey's long history (Harmony/Crown $7.95).

In THE SINGING COWBOYS, David Rothel surveys the musical Westerns of the 30s, 40s and 50s popularized by such actors as Gene Autry, Roy Rogers and Tex Ritter. Rothel's interviews and his extensive filmography provide firsthand insight into the genre (Barnes $19.95).

The use of monumental pageantry, spectacular battles and superhuman heroism is the subject of THE HOLLYWOOD EPIC, Foster Hirsch's knowledgeable survey of a perennial genre from Griffith's *Intolerance* and De Mille's *King of Kings* to Kubrick's *Barry Lyndon* (Barnes $15).

A wide-ranging selection of superb still portraits, SUPERSTARS presents large-size photographic reproductions in color and b&w of 67 screen favorites of all times, from Rudolph Valentino to Jane Fonda, with an appropriate commentary by Alexander Walker (Dutton $9.95).

★ ★ ★

NAMES ON THE SCREEN

One of the best biographies ever written—informative, thoroughly researched and highly readable—JOHN HUSTON by Alex Madsen perceptively dissects the prolific and talented director's mercurial personality in a sustained analysis of his uneven films and his impulsive lifestyle (Doubleday $10).

In THE WORLD OF LUIS BUNUEL, Joan Mellen has assembled a notable collection of essays about the director whose unique creative brilliance is as-

sessed by fellow directors, writers, critics and Bunuel himself. Mellen's introduction is an insightful study of Bunuel's motivations, esthetics and imagery (Oxford U. Press $15/5.95).

Articulate and socially aware Charlton Heston records in THE ACTOR'S LIFE observations about himself and his films. Covering in concise entries the 1956-76 period, it illuminates the interests and concerns of a performer that often transcend his professional activities (Dutton $12.95).

Two clashing yet complementary appraisals of the late star, JOAN CRAWFORD by Bob Thomas (Simon & Schuster $10.95) and MOMMIE DEAREST by Christina Crawford (Morrow $9.95) offer frightening descents into an intense, self-centered and often paranoid personality. Thomas' book is an objective and knowledgeable biography, while the other is a scorching memoir by Joan's adopted daughter.

In RITA HAYWORTH: THE TIME, THE PLACE AND THE WOMAN, John Kobal traces a sensitive portrait of the "Love Goddess," a striking beauty whose moody boldness on screen hid a basically timid and introverted personality (Norton $12.95).

The study of a really nice guy whose success didn't go to his head (at least, so far), TRAVOLTA! by Michael Reeves is mainly a photobiography, but with enough text to satisfy the legitimate curiosity of his innumerable fans (Jove $1.95).

In PRIVATE ELVIS, Diego Cortez has assembled an appealing album of Presley's life as a GI during his service in Germany. Elvis generally maintains his composure, but the frauleins sure go gaga over their idol (Two Continents $6).

The editors of *Freedomways* have assembled in PAUL ROBESON: THE GREAT FORERUNNER a composite portrait of the dynamic figure whose multifaceted activities encompassed political activism, the stage and films, with his powerful interpretation of Eugene O'Neill's *Emperor Jones,* among others (Dodd Mead $12.95).

★ ★ ★

ASPECTS OF THE CINEMA

A practical and comprehensive textbook, Robert Edmonds' SCRIPTWRITING FOR THE AUDIO-VISUAL MEDIA provides basic data on the specific needs of film, television and radio in all their writing requirements. Included are samples of fiction and non-fiction scripts, documentary and educational programs, as well as a useful discussion of writers' jobs and markets (Teachers College, Columbia U., $8.95).

A challenging and impressive study of the film industry's notable non-conformists, CREATIVE DIFFERENCES: PROFILES OF HOLLYWOOD DISSIDENTS by David Talbot and Barbara Zheutlin reports on the lives and activities of 16 progressives who work, or have worked, in the film establishment. Writers Albert Maltz and Lee Phillips, directors Abraham Polonsky and Michael Schultz, cameraman Haskell Wexler, actress Jane Fonda, studio executives Thom Mount and Mark Rosenberg, editor Bruce Green, all fought to maintain the integrity of their social and artistic views against often insurmountable odds (South End Press, Box 68, Astoria Sta., Boston, MA 02123; $12/5.40).

In GLOSSARY OF FILM TERMS, John Mercer has expertly compiled clearly written definitions for some 2300 words and phrases currently used in movie production. This lexicon, while intended for students of the medium, will be useful to professionals as well (University Film Association, Temple U., Philadelphia, PA 19122; $4.75).

Made in England with pick-up shots in the US, *Superman* is the film version of the classic s-f story whose production is described in lively detail by David Michael Petrou in THE MAKING OF SUPERMAN. Abundant technical facts and personal anecdotes insure a rewarding "inside" book (Warner $2.25).

Aptly edited by Herbert Marshall, EISENSTEIN'S THE BATTLESHIP POTEMKIN offers a comprehensive view of what is probably the most celebrated film ever made. It offers a broad international collection of writings on the film as an artistic achievement and political event, together with Eisenstein's own account of its conception and filming (Avon $7.95).

An impressive large format import from the USSR, DESIGNERS OF SOVIET FILMS reproduces 248 elaborate drawings in color and b&w of movie sets created by Soviet artists. The designs, esthetically striking and imaginatively rendered, are described in an extensive English-language introduction by T. Silantieva (Imported Publications, 320 W. Ohio St., Chicago, IL 60610; $27). ■

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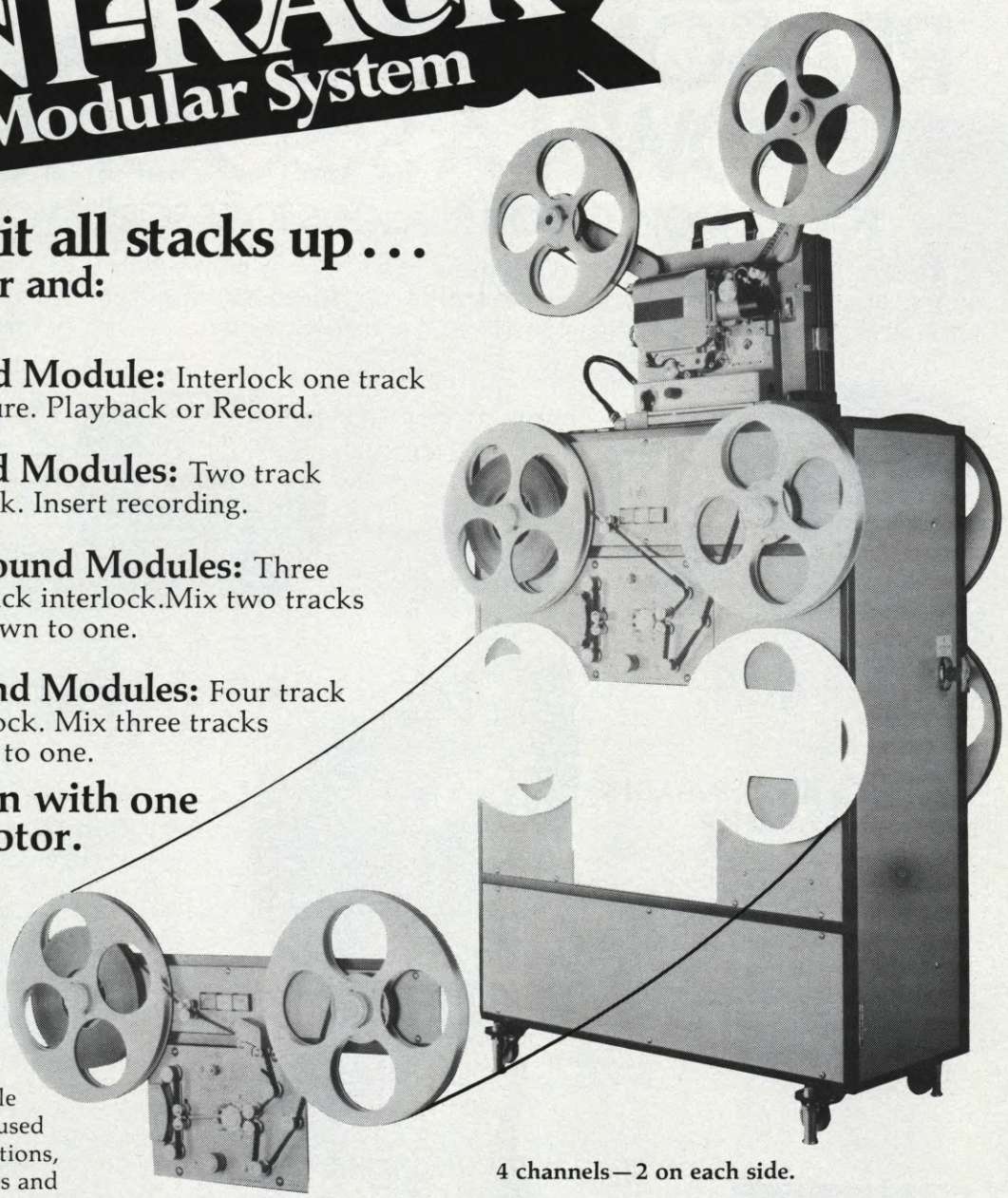

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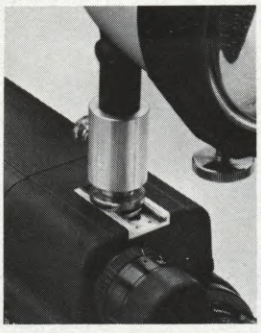

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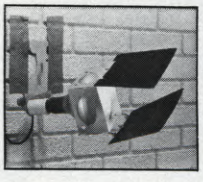

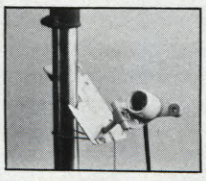

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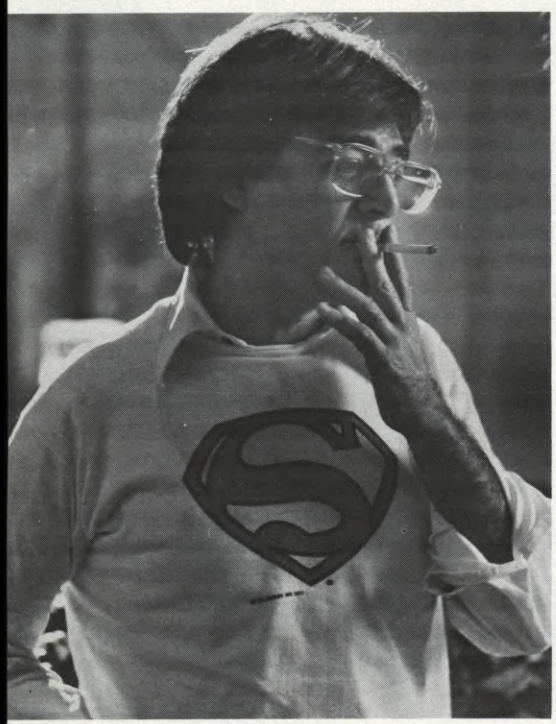
BEHIND THE SCENES OF "SUPERMAN"

After two years of arduous production (and a budget reported to be as high as $50,000,000), the exploits of that All-American hero, Superman, are detailed in a super-movie full of fun and film magic

(EDITOR'S NOTE: Except for the material that follows, which has been provided by Warner Bros. as general background to the technical coverage of the filming of SUPERMAN, all of the articles about the production which appear in this issue are based on research and interviews conducted by American Cinematographer *Contributing Editor David W. Samuelson.*

Living in London, where SUPERMAN was almost two years in the making, Mr. Samuelson kept a watchful eye on the project all the way through its production. A former cameraman himself and a world-renowned authority on motion picture technology, Mr. Samuelson was the perfect person to document the extremely intricate and innovative technical aspects involved in getting SUPERMAN onto the screen.

In the final weeks before going to press, Editor Herb Lightman flew to London to coordinate the myriad editorial bits and pieces and select the artwork and stills reproduced in these pages. Other than that, this issue of American Cinematographer *is entirely David Samuelson's "baby" and the Editor and staff are deeply grateful to him for his tireless efforts and dedication in seeing it through.)*



ABOUT THE PRODUCTION

Superman, a native of the planet Krypton, reared in Smallville, U.S.A. and a resident of Metropolis, was born in Cleveland, Ohio, the brainchild of writer Jerry Siegel and cartoonist Joe Shuster.

SUPERMAN, the movie, was conceived at a sidewalk cafe in Paris by the father-and-son production team of Alexander and Ilya Salkind and their family friend, Pierre Spengler.

Directed by Richard Donner, who was responsible for THE OMEN, SUPERMAN has taken almost two years to film at locations including New York City; Gallup, New Mexico; Alberta, Canada; and England's two major production centers, the Shepperton and Pinewood Studios. SUPERMAN is being released in the United States by Warner Bros., a Warner Communications Company.

The project began with the development of the story and screenplay by Academy Award winner Mario Puzo, author of *"The Godfather"*. Then, David and Leslie Newman and Robert Benton did additional work on the script. When Richard Donner became involved he brought in Tom Mankiewicz as creative consultant.

The cast and creative contingent which contributed to SUPERMAN boasts twelve Academy Awards and nearly one hundred nominations. Included are one three-time recipient, composer-conductor John Williams; and two holders of the "Best Actor" Award, Marlon Brando and Gene Hackman.

A dual winner (for ON THE WATERFRONT and THE GODFATHER) and five-time nominee, Brando is almost as much a legend—in his own way—as Superman. He plays Jor-El, Superman's father and the leading scientist of the doomed planet, Krypton.

"It's a crucial role," explained Donner, "which sets the tone and style of the film."

The schedule called for Brando to work on the first day of principal photography, but he almost didn't make it. He was suffering a heavy cold, coupled with jet lag, and arrived on the set at the Shepperton Studios, bundled in scarves and sweaters and fortified with Kleenex.

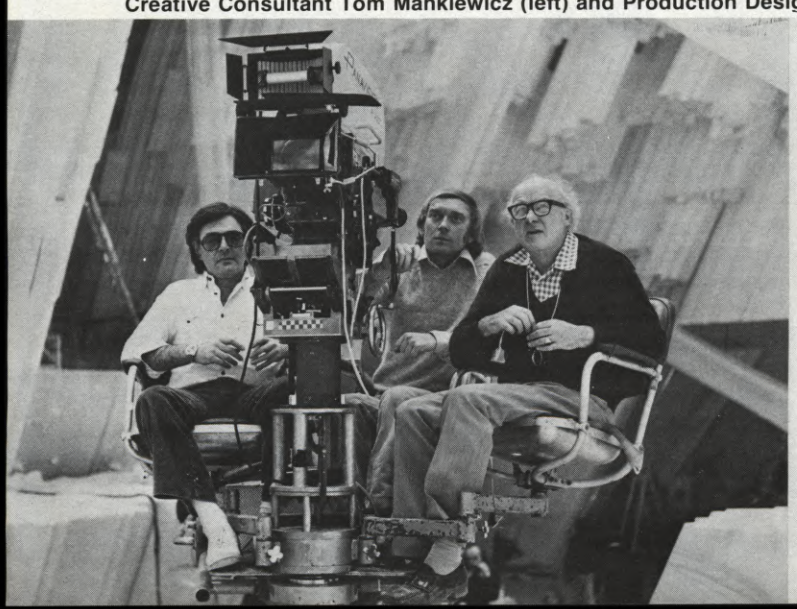
"What happened next was amazing," recalls Donner. "We agreed to film the rehearsal, as if it were a take. 'Who knows,' Marlon suggested, 'we might get lucky.' "

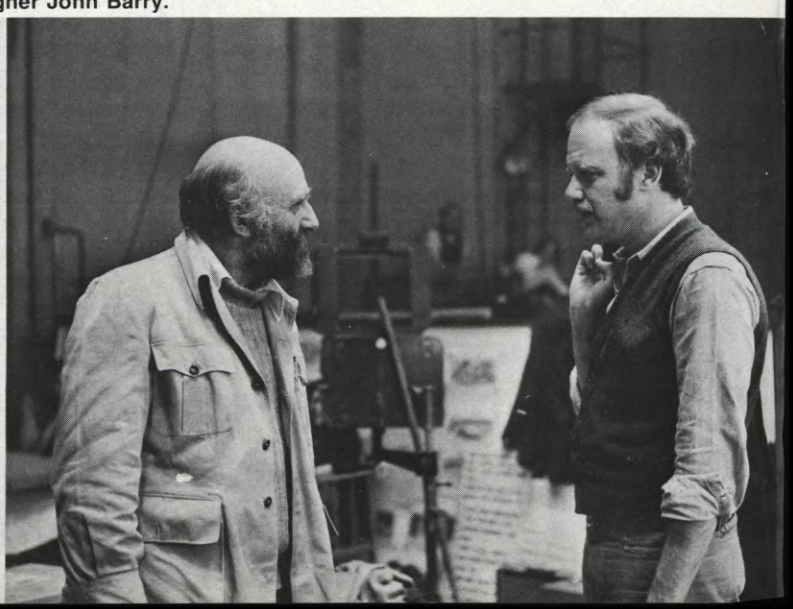
In a towering set, surrounded by John Barry's vision of the futuristic marvels of the planet Krypton, Brando began a lengthy monologue, expressing his certainty that his world was doomed and his agony at sending his infant son to the safety of planet Earth.

"When he finished, there was stunned, respectful silence," continues Donner. "That first take is the scene you will see in

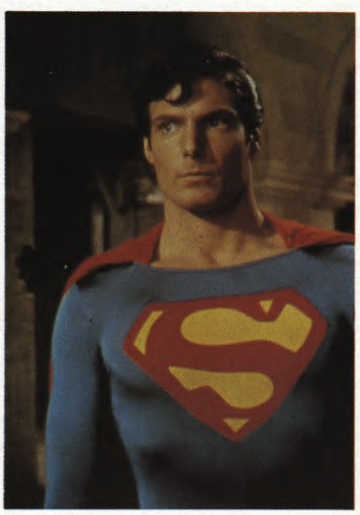
Continued on Page 62

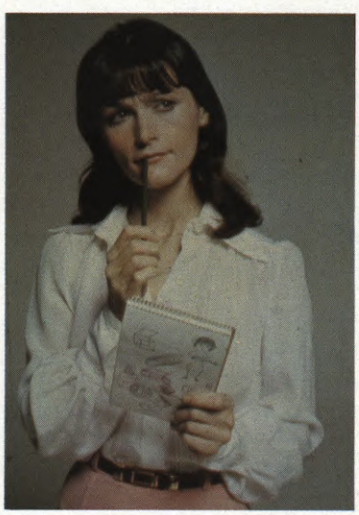
(ABOVE LEFT) Director Richard Donner deserves to wear a Superman shirt, considering his superhuman effort over a period of two years in leading a huge cast and crew through one of the most complex films ever made. (BELOW LEFT) Donner on the set with Camera Operator Peter MacDonald and Director of Photography Geoffrey Unsworth, BSC. (RIGHT) Among the heavyweight talents behind the camera were Creative Consultant Tom Mankiewicz (left) and Production Designer John Barry.





(ABOVE) Little Superman (Superboy?), shot from his native planet (Krypton) in a starship that looks like a giant geode, lands on Earth and plows up a field in the process. (BELOW LEFT) One phase of the leading character's dual personality is awkward, bumbling reporter Clark Kent, too shy for practically everything. (CENTER) The other side of his psyche is Superman, a faster-than-a-bullet Man of Steel who devotes his superhuman powers to fighting for everything that is RIGHT and GOOD. Both alter-egos are played by Christopher Reeve. (RIGHT) Coveted by both personalities is feisty reporter Lois Lane, played by Margot Kidder.





(LEFT) "SUPERMAN" abounds in villains, three of whom are shown here writhing in paranoia. (CENTER) Young Clark Kent, played by Jeff East, jumps in front of a racing locomotive. (RIGHT) Valerie Perrine plays the voluptuous moll of arch-villain Gene Hackman. (BELOW LEFT) Dick Donner supervises Second Unit preparing to shoot scenes of water gushing out of cracks in Boulder Dam. (CENTER) A perfect "Technicolor Sunrise" on location in Canada, as young Clark Kent (Jeff East) sets off to seek his destiny. (RIGHT) Numerous soft-light units illuminate massive sets at Pinewood Studios in England.

GEOFFREY UNSWORTH, BSC AND THE PHOTOGRAPHY OF "SUPERMAN"

By PETER MacDONALD
Camera Operator

An incisive analysis of the photographic challenges and techniques involved in this very major motion picture—and a heartfelt tribute to a legendary cinematographer from his co-worker of two decades

(EDITOR'S NOTE: At the time that Academy Award-winning cinematographer Geoffrey Unsworth, BSC, died of a sudden heart attack while filming in Paris recently, David Samuelson had just made arrangements to fly over and interview him relative to his work as Director of Photography on SUPERMAN. Since such an interview was no longer possible, Peter MacDonald, for many years Operator and Assistant to Mr. Unsworth, very kindly agreed to discuss not only Mr. Unsworth's work on SUPERMAN, but the working methods and artistry which established him among the very top cinematographers of all time. The article which follows has been extrapolated from the resultant discussions between Mr. MacDonald and Mr. Samuelson.)

As an Operator, I would say that I worked on about 30 features with Geoffrey Unsworth, as well as quite a few others in the capacities of focus-puller and loader. The first film I did with him was called A NIGHT TO REMEMBER, which was too long ago for even me to remember—but it must have been 20 years ago. So I have devoted my entire career basically to working with Geoffrey and, up until nine months ago when I had to leave him to do another film, I had spent literally the last 12 years working non-stop with him. Included among the features we worked on together were: SUPERMAN, A BRIDGE TOO FAR, CABARET, MURDER ON THE ORIENT EXPRESS, RETURN OF THE PINK PANTHER, CROMWELL, 2001: A SPACE ODYSSEY, BECKETT, HALF A SIXPENCE, THREE SISTERS (which we were very proud of, although it didn't hit the headlines) and many others.

If I may, I should like to extend this discussion beyond SUPERMAN to permit a wider examination of Geoffrey's skills and techniques as a cinematographer. He was an intuitive cameraman, as he himself would readily have admitted, although no one would ever have believed him. He wasn't a highly *technical* cameraman. He believed in his instincts and his gut feeling for photography.

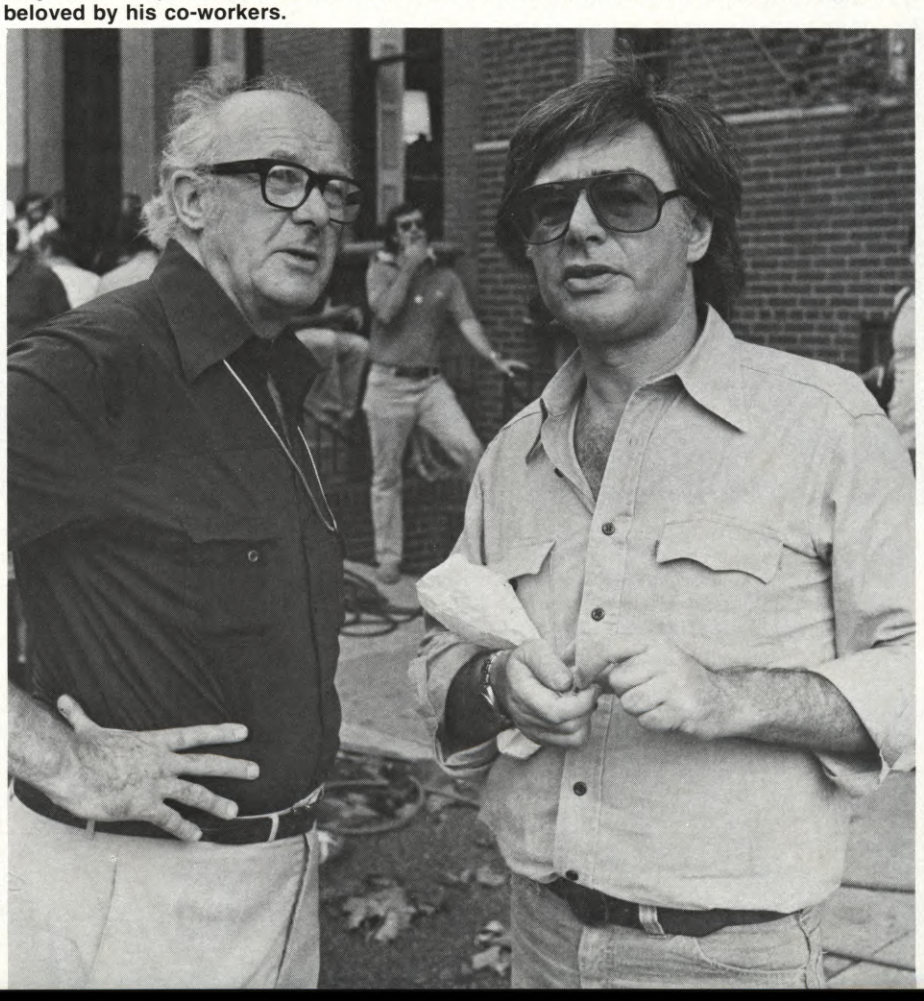
I should say that there are very few cameramen who are quite as daring as Geoffrey was when it came to taking chances. I have seen many directors who, when looking through the camera (after we had filled a room with smoke and put the filters on) turned slightly pale at what Geoffrey was up to. A very good example of this was the Krypton sequence of SUPERMAN, in which all of the artists were wearing costumes made of front projection material, which, in combination with the light boxes made up for us by the Samuelson organisation (and which were on dimmers) made it possible, if you wished, to wipe the artists right off the screen. Now, remembering that the artists, in this case, were people like Marlon Brando (who didn't come cheaply), there was obviously cause for worry. You had to hit a happy medium of photography and have a recognisable image, which I feel that Geoffrey did to perfection. But it took an awful lot of guts to take it as far as he did, and that was one of his strong points.

Geoff would never talk about what he was doing, but he loved every moment of his work and dedicated everything he had to it. I'm sure that any one of 20 or 30 directors would back me up when I say that Geoff would never influence a director against doing a particular shot because it would be difficult for him. He would chew his viewing glass and walk away and maybe kick a box, but he would turn out the shot asked for, although it sometimes seemed an impossibility. Having had experiences with some other cameramen, I have seen them try to influence a director out of a shot because of difficulty to them. Geoff would never, never do that—which I think says an awful lot for him.

Geoffrey didn't always work on huge budget films, as everyone thinks he did. We worked on films such as THREE SISTERS, directed by Lord Laurence Olivier, and DANCE OF DEATH. These were three-hour films that were made in three or four weeks. You can't make films like that with quality without having very involved shots. We were doing nine and ten-minute tracking shots ending up in many closeups. When you have to come to closeups of people like Olivier and Joan Plowright, each one has to look as good as if it were shot as a separate closeup. These are difficult shots to do. In the old days people used to brag about doing a ten-minute take, but we had to turn out sometimes one or two of these a day because of the short schedule.

As an instinctive cameraman, Geoff

"SUPERMAN" Director of Photography Geoffrey Unsworth, BSC, who passed away recently in Paris while working on the Roman Polanski film, "TESS", shown here with Director Richard Donner on location in New York. A "Best Achievement in Cinematography" Academy Award winner for his work on "CABARET", Mr. Unsworth was known not only as an inspired artist of the camera, but as an extraordinary human being, much beloved by his co-workers.

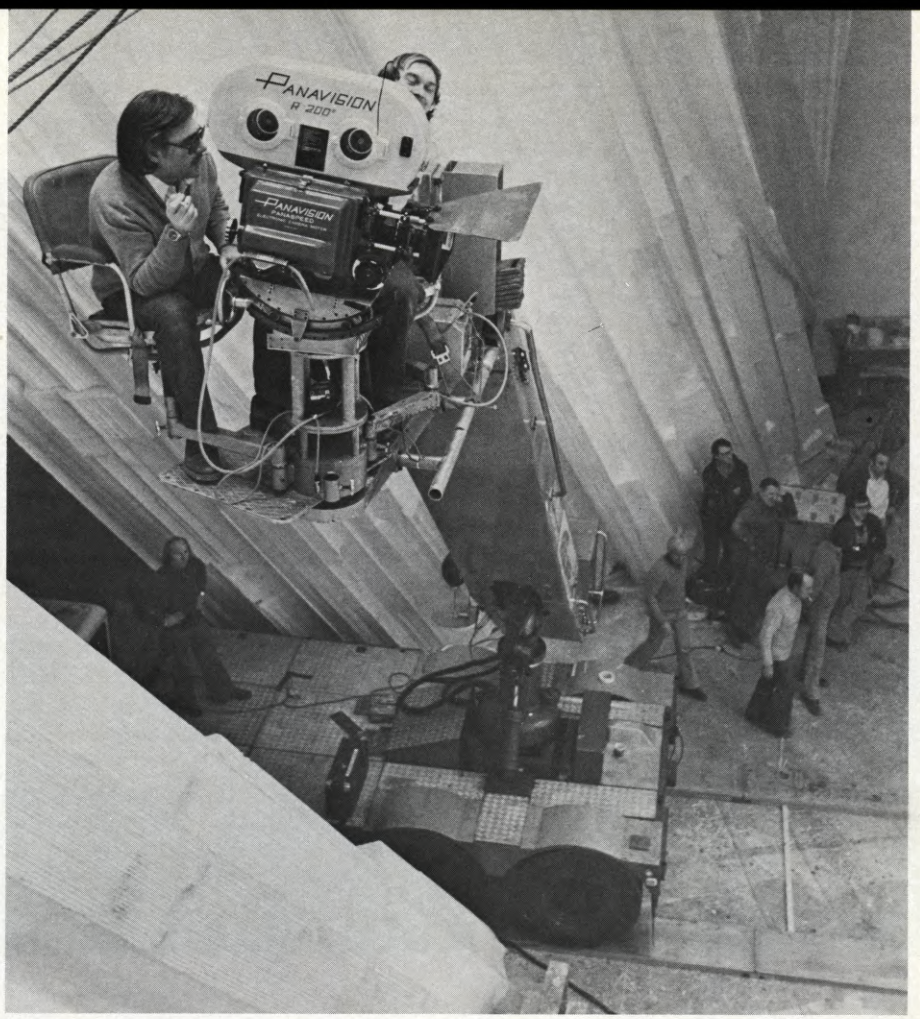


was really like an artist of the past—an Impressionist. It was always amusing to me as his focus-puller, and later as his Operator, to see him choose the very best lenses that Samuelson or whoever we went to could supply—and throw out anything that wasn't perfect—and then for the rest of the film proceed to destroy the image up to the point that he wanted to. He had to start off with the very best equipment—equipment which he could trust—so that from there on in he would know how far he could go with filters and back-lit smoke in order to destroy the image to his taste.

When we were making CABARET there was a man on the set from 7 o'clock in the morning (we used to start work at 8 o'clock) and that man's job was to fill the stage completely with smoke. It wasn't just a little puff of smoke; the whole stage was full of smoke that stayed there all day long at a consistency that Geoff would choose. The more people complained about it, the more you got a twinkle in Geoff's eye, because he knew—as we all learned—that the results were exactly what they should have been, and eventually got him the award he so richly deserved from the Academy, and which meant so much to him.

On CABARET we had a lot of complaints from the Coast, as it were. They were very upset with Bob Fosse and Geoffrey and myself, to some degree, in the way that we were shooting the film. They wanted a glossy musical and Geoffrey and Bob had decided that it should be something that you could believe in—as if you were actually there, watching a part of life. Every Friday night the phone used to ring from Los Angeles and we would have quite a lot of static, but I must say that Geoff kept to his guns and Bob Fosse was, in both Geoff's and my opinions, one of the best directors that we had ever worked with. He stood by Geoff right to the end and I feel that the result proved that they were both right.

On A BRIDGE TOO FAR, which was shot in Holland, the mass parachute drop was covered by more than 20 cameras, some of which were mounted on paratroopers' helmets. The coverage on that sequence and the planning that went into it were quite incredible. A lot of the camera people were on very long lenses—1000s and 800s with doublers. On two of the drops we were lucky with the weather conditions and could use our fog filters, but on the third drop Geoff told the operators over the radio to remove their filters because the foggy weather was a natural diffuser. In the final cut you couldn't tell the difference between the stuff with and without filters. That one drop was the first time in 14 years that I had seen Geoff shoot without filters, but he wasn't a dogmatic type who said, "I shoot with filters and that's it." He knew that in this case the conditions would do what the filters had been doing for him.



Director Dick Donner and Camera Operator Peter MacDonald, atop the "Sam-Mighty" crane, line up a boom shot on the set of "SUPERMAN". The opening sequences of the film, which takes place on the planet Krypton, include heavy effect photography, but for the Earth sequences, Donner preferred a more straightforward "comic book" style.

Regarding his use of filters for SUPERMAN, they were used heavily in the opening sequence, which takes place on the planet Krypton when Superman (or Superboy, as he is then) is sent off by his parents to safety on Earth. There the effects could really go over the top. As I mentioned before, all the actors wore uniforms made out of front projection material that was crinkled up. We had camera-mounted light boxes on dimmers so that we could bring out their uniforms (and parts of the background that had 3M material) as we wished. There was a lot of smoke around, too. Visually, that really was a separate section of the film.

However, once Superman landed on Earth, Dick Donner wanted the picture to have a straighter, comic book look, so most of the remainder of the picture was shot with just a light fog filter. We knocked just the edge off it and Geoff's photography did the rest. After having seen the film, I feel that it works immensely well.

The light boxes we used had a light which shone through a piece of semi-silvered mirror placed immediately in front of the lens—like a front projector without any film or slide in the gate, as it were. The light boxes were like special matte boxes with bulbs in them.

Geoffrey had the idea of using the 3M front projection material on the Krypton planet sequence and while he and Dick Donner were away scouting locations in America and Canada, he left me in England with the task of working out the best way of doing it. I took advice from Gerry Turpin, who was amazingly helpful, but anything that Gerry had at that time didn't quite work for what I felt was needed on the film. I went to Samuelsons and spent some time with their engineer, Derek Lee, and John Campbell, our assistant. What we needed was something that would fit onto a camera. It had to be something that you could pan or tilt without any great worries, and something that would be simple, yet effective. We would eventually have to make nine or ten of these.

I experimented with everything possible during the two weeks that they were away. The end result was a box that would fit on the front of the camera and

which incorporated a semi-silvered mirror set at a 45° angle, pointing upwards towards a lamp. I was worried only about whether we were going to get into terrible trouble with back lights, because of Geoffrey's love of back light. The problem of keeping lights from shining directly into the lens was always terrifying to any focus assistant who worked with him. But the device did work. We put two long 1250-watt quartz strip lights in each unit and each unit was on a dimmer, so we had full control. We also had to incorporate some heat-proof oven glass to protect the semi-silvered mirrors and the camera from the heat.

Because a lot of the shooting involved multi-camera set-ups, we set the brightness by eye for each shot. Even on the silent stage at Shepperton Studios, which has a diagonal of nearly 300 feet (and which was the biggest stage in Europe until the 007 Stage was built at Pinewood), we were able to light up someone at the far end of the set and to pan and tilt and track at the same time. Also, of course, we were able to use coloured filters and many other things. It was tremendously successful.

SUPERMAN often was a multi-camera (and certainly a multi-*unit*) production. At one time I think we had nine separate units shooting all over the world. In the sequence where Marlon Brando is shown with the baby who is supposedly

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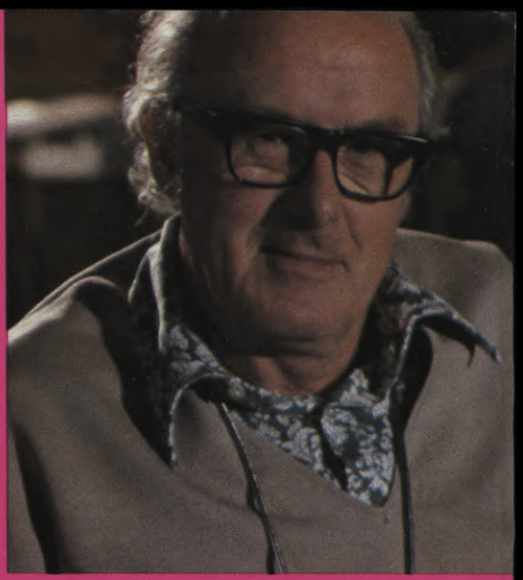
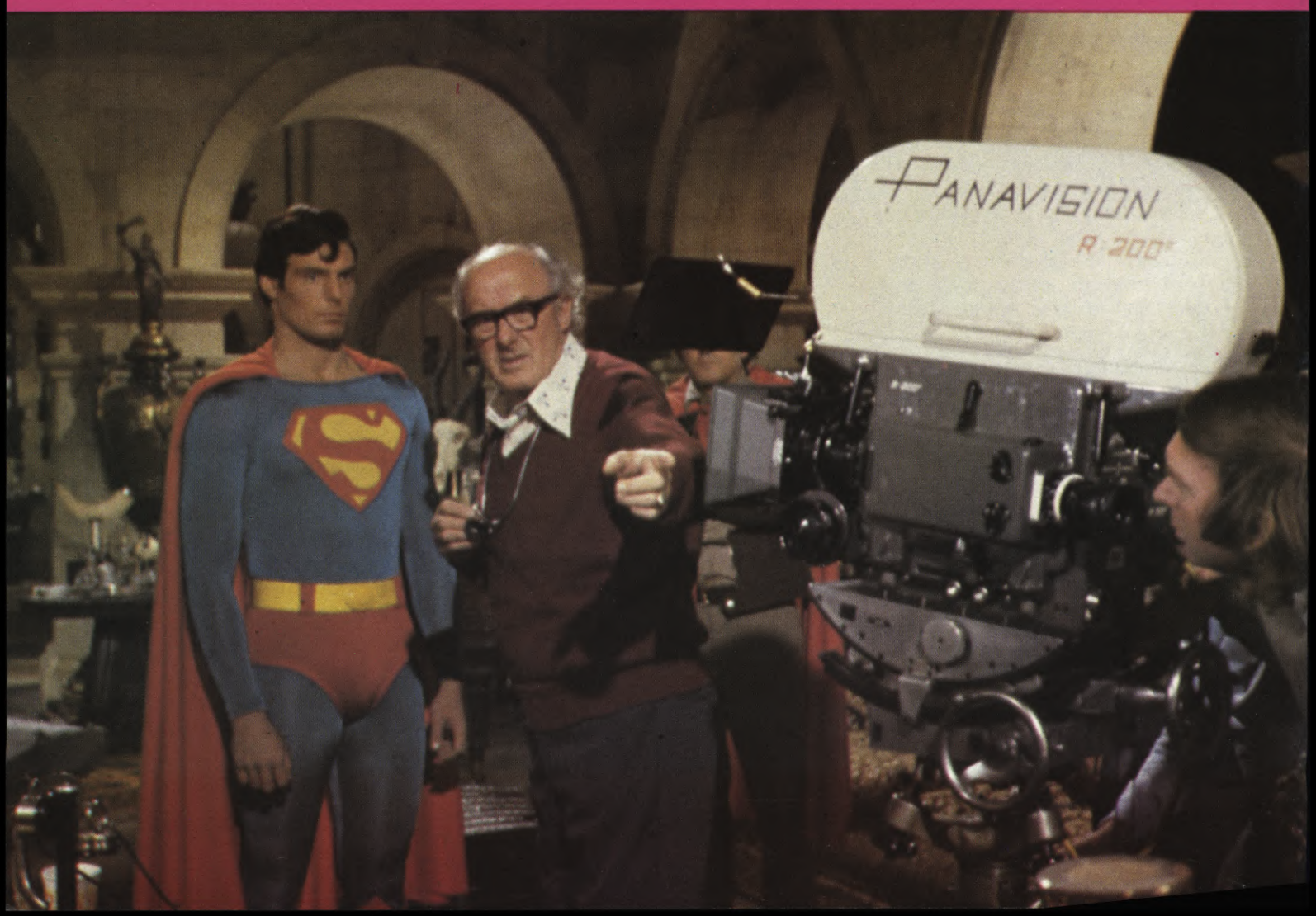
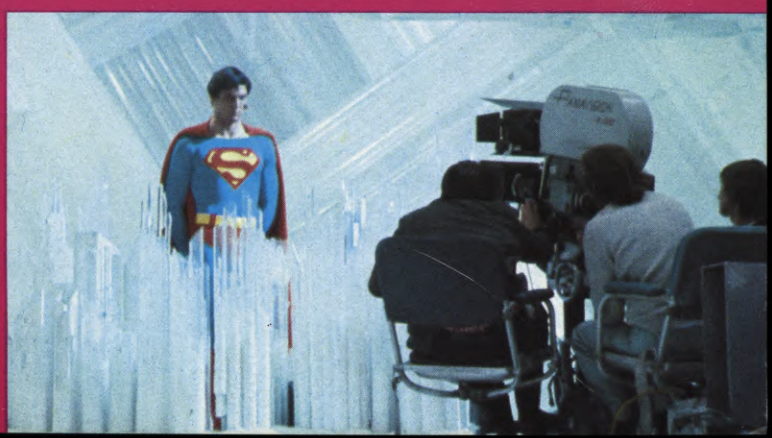


(LEFT) Geoff Unsworth scans the sky, hoping for that soft, bright overcast light which he so dearly loved. (CENTER) Donner talks with Second Unit Cameraman Alex Thompson on the Boulder Dam set, Pinewood Studios. (RIGHT) MacDonald lines up a high-angle shot on the Titan crane. (BELOW) Geoff Unsworth points out elements of screen "geography" to Superman (Chris Reeve). He was unfailingly kind and helpful to co-workers—especially those new to the film medium.



Three Panavision cameras are mounted side-by-side on a single Moviola dolly in preparation for shooting an intricate tracking shot involving Marlon Brando and baby in the opening sequence of "SUPERMAN". The complicated set-up was considered the only way to insure a perfect match of action, dialogue and camera movement.

(LEFT) Dressed in scintillating wardrobe made of 3M front-projection material (illuminated by light-box on camera), Brando stands in smoke-filled set representing Krypton Council of Elders. (RIGHT) Superman walks through a tunnel of fire. (BELOW LEFT) Hollywood camera crew shoots on desert near Gallup, New Mexico. (RIGHT) Superman is photographed in his "Palace of Ice".



DIRECTING THE FILMING OF AN AMERICAN SUPERHERO

Like the ringmaster of a 12-ring circus, this super-talented director, over a two-year period, functioned as leader, father-confessor, resident psychologist and inspiration to a huge crew of actors and technicians

It was the Summer of 1976 and THE OMEN, directed by Richard Donner, was climbing toward the hundred-million-dollar mark in world-wide grosses.

That's when Donner received a sudden transatlantic phone call from Paris. "This is Alexander Salkind. Do you know who I am?"

"No," replied the director.

"I'm producing SUPERMAN," Salkind informed him. "I've just seen THE OMEN. It's marvelous. I want you to direct our picture."

After receiving assurances that he could have complete control of the script, Donner's reply became a commitment to two years of exhausting, absorbing, richly rewarding effort. It would have a dazzling stellar cast, eye-popping special effects and locations all over the world, with two London studios as home base.

It would have one more thing, Donner was determined. *Verisimilitude.*

"It's a word which refers to reality," he explains. "I had it printed on big signs which were sent to every creative department—wardrobe, casting, special effects, you-name-it. It was a constant reminder that if we gave in to temptation, and parodied Superman, we would only be fooling ourselves."

Reality—in a movie in which a Man of Steel from the planet, Krypton, flies through the air in a crimson cape?

"Absolutely," says Donner. "Of course, it's bigger than life, but there is reality in the characters. It's a comedy, a love story, an adventure and its own thing.

"But it is always true to the 'Superman' legend."

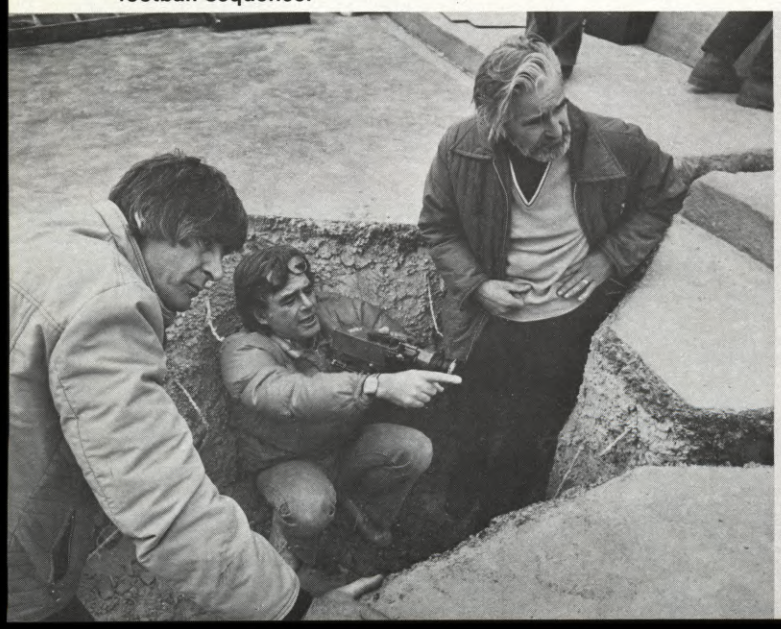
Born and brought up in New York City, the son of a gifted woodcarver, Richard Donner was the first in his immediate family to enter show business—with the exception of one "black sheep uncle" who produced musicals during World War II.

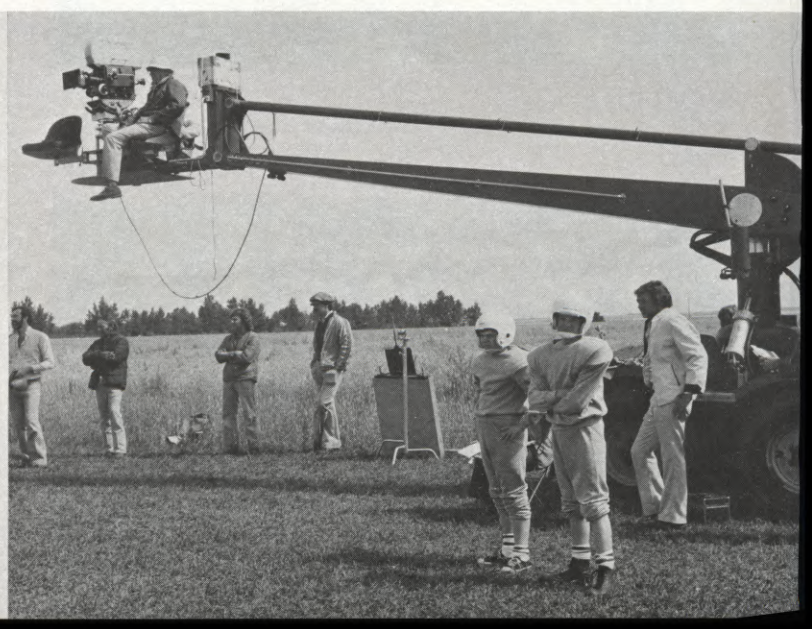
His first ambition was to be an actor. After a succession of "five line parts" off-Broadway, he found himself working with director Martin Ritt on a TV production of Somerset Maugham's *"Of Human Bondage"*. Ritt had some good news and some bad news for the young actor. The bad news—first—was that he couldn't take direction. The good news was that Ritt thought he'd make a fine director.

"Show me," said Donner, and Ritt named him to be his assistant.

Tranferring his new career to California in 1958, Donner directed commercials, industrial films and some highly successful documentaries. The first Donner-directed dramatic effort to cause excitement was WANTED: DEAD OR

(ABOVE RIGHT) Director Richard Donner and Director of Photography Geoffrey Unsworth, BSC, let a couple of young extras have a peek through the camera during the shooting of a high school football sequence in Canada. (BELOW LEFT) Donner lines up a low-angle shot with Second Unit Cameraman Alex Thompson (left) and Operator Jack Lowen. Geoff Unsworth particularly admired Thompson's ability to match perfectly his own photographic style "and do it better," according to the modest Unsworth. (RIGHT) Lining up a crane shot for the football sequence.





ALIVE with a newcomer named Steve McQueen.

An unbroken succession of "Movies of the Week" and series episodes of shows like KOJAK and BRONK followed. His special, PORTRAIT OF A TEEN-AGE ALCOHOLIC, scored with both the critics and the Nielsen pollsters and he achieved a rare reputation, among network chieftains, which kept him constantly in demand. Virtually every time Donner directed a 'pilot,' it went on the air as a series.

Finally, producer Harvey Bernhard asked him to direct THE OMEN. He sensed that in its satanic tale was the potential for a truly nightmarish experience. But it could not be treated with traditional horror trappings.

In a meeting with Alan Ladd, Jr., production head of 20th Century-Fox, he was asked how he planned to handle the script. "Eliminate the obvious," he replied. Ladd approved and within a year, Fox had one of the most resounding hits in its history.

He had little time to bask in THE OMEN's success. SUPERMAN became an all-consuming challenge and there were days, one suspects, when he wished that Salkind had dialed the wrong number.

"After working seven days a week, fifteen hours a day, I'd sometimes go home at night and dream about doing a two-character love story, set in one room," he recalls. "The challenges were enormous—they had to be—and many of them were of our own making. That's what you thrive on in this business.

"If there were two ways to film a scene—an easy way that would *look* easy on the screen—and a way that we all agreed was impossible, the answer was never in doubt. We'd shoot for the impossible."

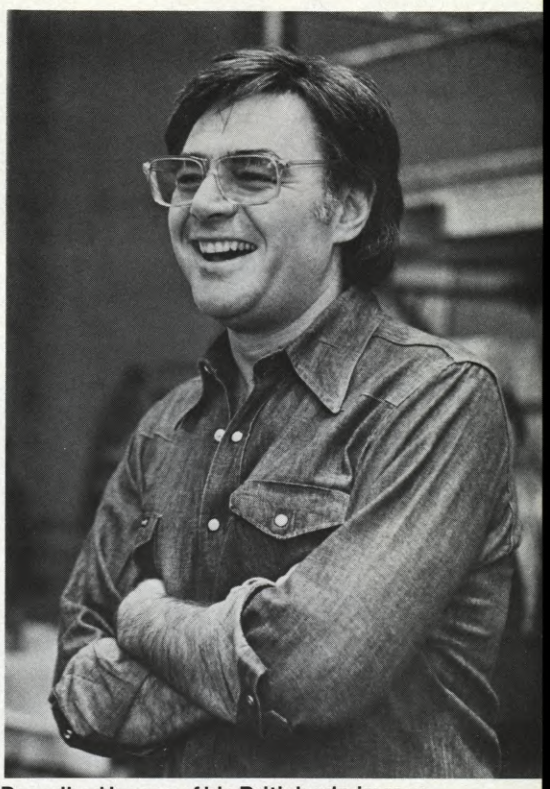
In the following interview, conducted in London by David Samuelson just after the completion of principal photography, Richard Donner talks about the trials, tribulations—and matchless excitement of directing SUPERMAN:

DAVID SAMUELSON: There has been an extraordinarily tight security screen around the filming of SUPERMAN. The "closed set" really has been "CLOSED". Would you care to comment on that?

RICHARD DONNER: To my mind, it's not been a cloak of secrecy; it's been a necessity. Steven Spielberg, who is a very dear friend and an incredibly talented human being, had a cloak of secrecy around CLOSE ENCOUNTERS OF THE THIRD KIND. His primary reason for that, I think, was to keep people from seeing the special effects until they actually saw them in the completed film. And rightly so—because when I saw those things happen for the first time in the theater I was spellbound. I would not have liked to see them beforehand. But when viewed in the total context of the film they were sheer genius.

I feel the same way. I have been reluctant to allow any of the footage of SUPERMAN to be seen in trailers or on television, because in context it's magnificent, but on a TV screen or out of context, it's just a shot of a man flying. That explains my reluctance to pre-release any of the footage.

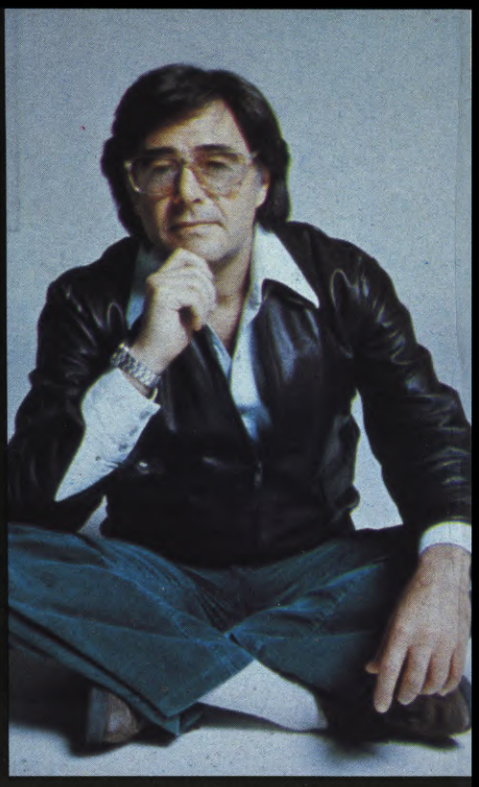
As for allowing anyone to see it being filmed or exposing our methods of doing it—that goes back to when I was a child in New York, where I was brought up with Santa Claus and, at a certain age, my best friend told me that there was no Santa Claus. He loused up Christmas for me for the rest of my life, in an odd sort of way. Well, Superman is Christmas and he's Santa Claus and I don't want to ruin the illusion for anybody. Superman flies and he flies magnificently, and that's one thing no critic in the world is going to take away from me. But as for the veil of secrecy—I didn't want people to come in and see how it was done. I didn't want it seen piecemeal. I wanted it to be seen in its total continuity.



Described by one of his British admirers as "frightfully American", Dick Donner's sometimes ribald sense of humor and unflagging enthusiasm are credited with maintaining cast and crew morale at a high level during the arduous two years of production.

QUESTION: Your "veil of secrecy" is perfectly understandable, if you are talking about what goes into a fan magazine, but do you feel that the same restrictions should apply to a

(LEFT) In a set representing the Editor's office of the *Daily Planet*, Donner rehearses a scene with Mark McClure as Jimmy Olsen, Jackie Cooper as Perry White, Margot Kidder as Lois Lane and Christopher Reeve as Clark Kent (alias Superman). (RIGHT) A couple of the hyperbolic headlines of the *Daily Planet*, announcing the impact of Superman on the city of Metropolis (a thinly disguised New York in the film). Since Superman is a legend with whom every American schoolchild for the last 30 years has been intimately familiar, he and the other characters had to ring true.



(LEFT) Although Superman is technically an immigrant from the planet Krypton, he has for the last 30 years been regarded as the arch-type All-American superhero. In fact, certain psycho-babble types sometimes refer to him as "the American alter-ego", as symbolized by his stance in front of the stars and stripes here. (CENTER) Maria Schell and Marlon Brando, playing Superman's real parents, are shown here dressed in reflective wardrobe made of crinkled 3M front projection material. (RIGHT) In a pensive moment, Director Donner can hardly believe the two-year grind is at an end.

(LEFT) Superman assumes his characteristically virile stance against the Metropolis skyline. (RIGHT) Like a figure from another planet (which he actually is), Superman moves down a tunnel of light, made even more eerie by Geoff Unsworth's combination of smoke and fog filters. (BELOW) He demonstrates just one of his superhuman powers by using his body to fill in a ruptured railroad track. Donner considers Superman lookalike Chris Reeve to be "a gift from God". Far from being "just another pretty face", Reeve has been a professional actor since the age of 14. Donner considers him "the finest young actor I've ever worked with."

technical magazine like *American Cinematographer*?

DONNER: Well, I find American Cinematographer *technical and I also find it very well edited and good reading. I lecture a lot around the States when I'm home—at universities and film schools—and the A.S.C. magazine is regarded by film students as a bible, a very good manual. I find it amazing. It's documented in such a good fashion that I don't call it merely a technical magazine. I call it an insight into the film industry. There are personalities involved; there are humanities involved; there is everything.*

COMMENT: The Russians describe it as "a window on current film production technology."

DONNER: But it's more than technology. It's humanities, too, because when they interview people (which I find terribly enjoyable to read), the personalities of those people come through. I know a lot of those people. I know their shortcomings and their greatnesses, and when I read what they've said I become aware of the problems everyone else on that picture had.

So when I think of our film as being a major subject for coverage in American Cinematographer, *I hope the publication will dwell not only on the technical aspects of SUPERMAN, but also on the humanities and personalities involved in its production. It was people who made the technical aspects of this picture work—and I mean totally. I'm serious when I say that if I had hired nothing but great technicians for this production, we would not have the film that we have today. One of the most important factors for me in selecting these people and working with them on a continuing basis has been not only their technical involvement, but their emotional involvement, because their emotional involvement contributed so much to their technical achievement.*

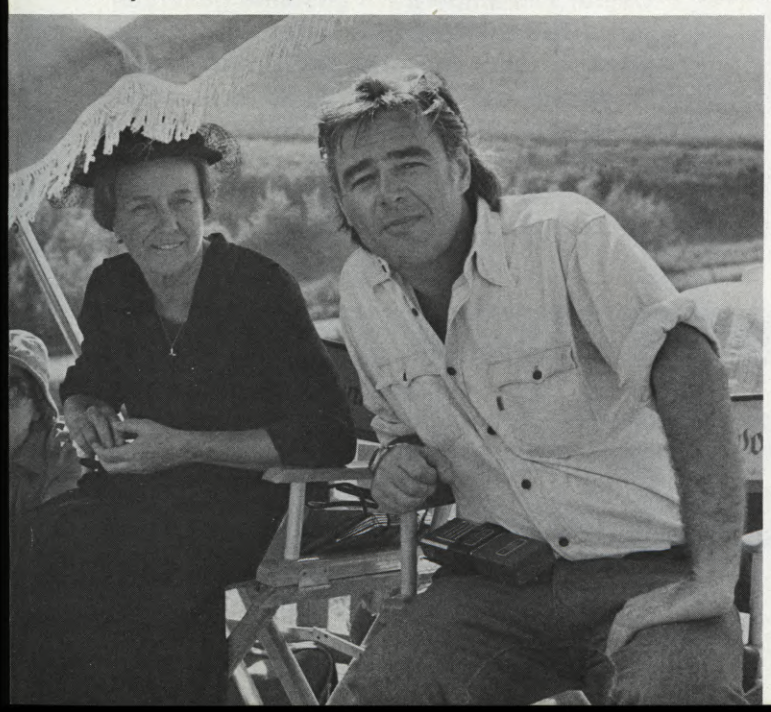
Marlon Brando, who plays Superman's father, Jor-El, poses for a harmonious portrait with Director Donner and Producer Pierre Spengler. If Brando looks happy, it's probably because of the reported $3,700,000 he pocketed for 12 days of work on the film. According to *Time* magazine, he first envisioned playing the role as "a green suitcase", but finally settled for the Kryptonian smoothie shown here.

QUESTION: In what way?

DONNER: A truly great technician may go by the book and know that there are certain things that can possibly be done, and other things that are impossible to do. While we know that the word "impossible" does not really exist, certain great technicians will still stay within the framework of what they do best—and they will deliver just that. But there are other great technicians who will become emotionally involved in the project and so charged up by it that they will go to other people and query, investigate, experiment, and push themselves far beyond the knowledge they already

Continued on Page 68

(LEFT) Donner on funeral sequence location with Phyllis Thaxter, who plays Superman's adoptive mother. (RIGHT) He lends a hand to help clear the set on location in Canada. Who said the director's life is a glamorous one? Donner was paged to direct "SUPERMAN" after his enormously successful film, "THE OMEN", caught the eye of Producer Alexander Salkind. Vastly different in tone from "THE OMEN", a scary occult thriller, Donner describes "SUPERMAN" as "a comedy, a love story, an adventure and its own thing."



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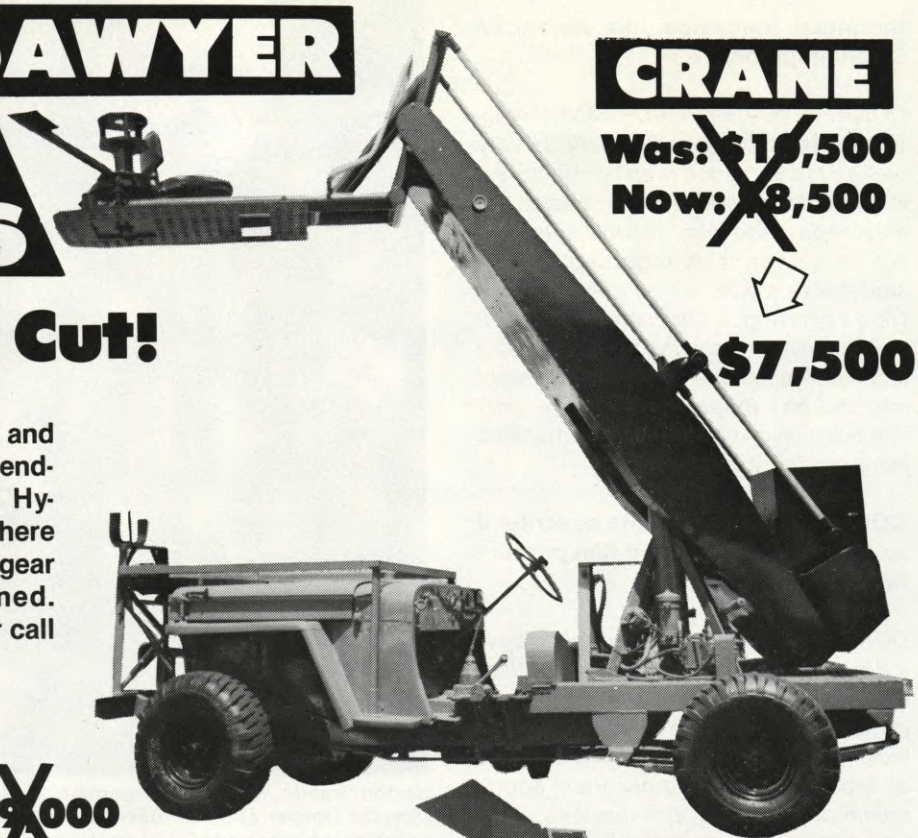

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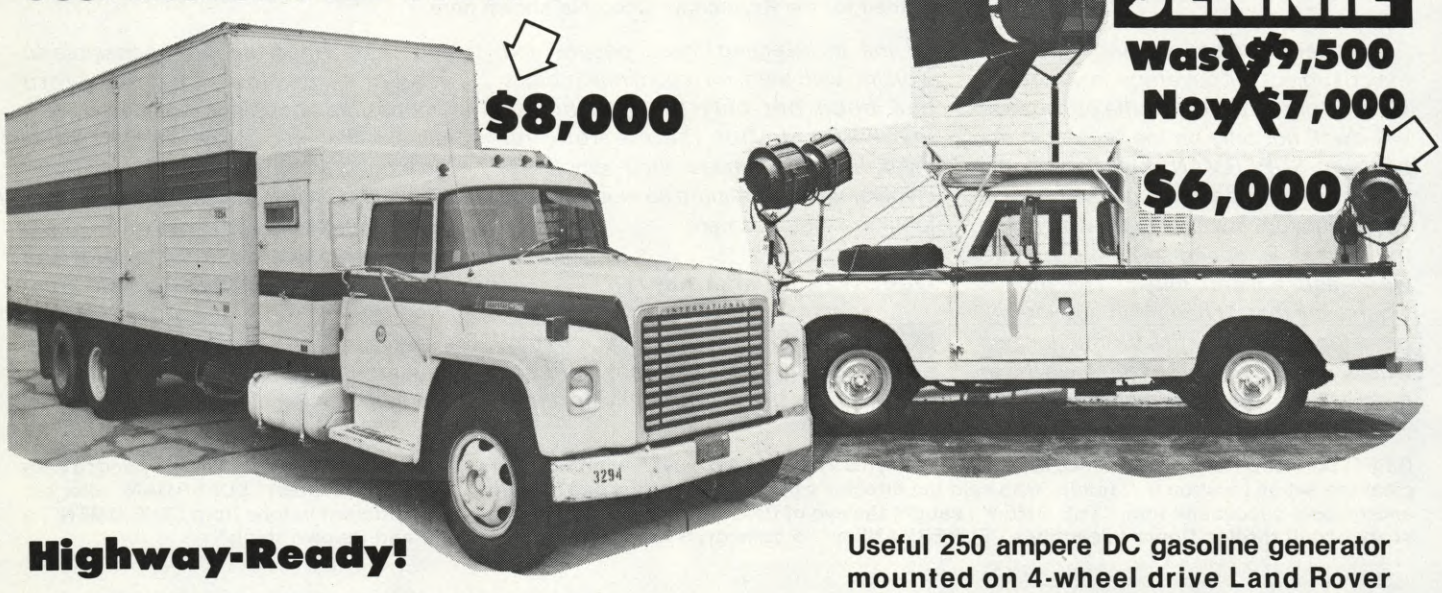

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PHYSICAL AND MECHANICAL SPECIAL EFFECTS FOR "SUPERMAN"

Building and operating hydraulic rigs gigantic enough to shake apart an entire planet was only part of the fun involved in creating the myriad mechanical effects for a film that depended so heavily on them

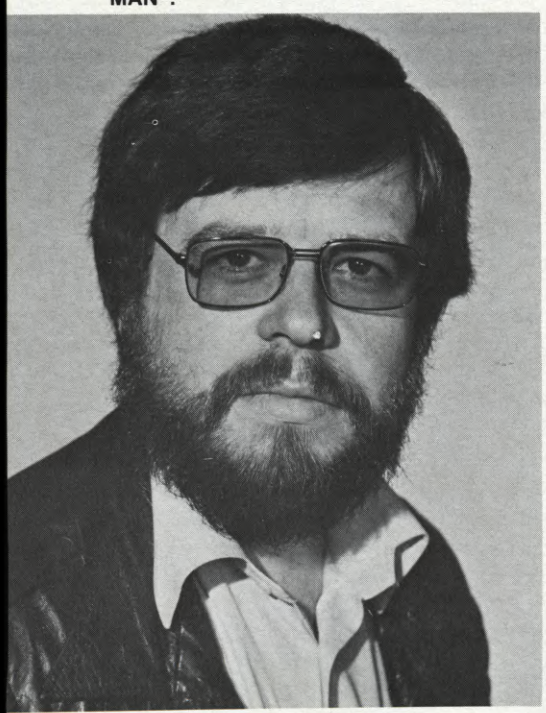
By COLIN CHILVERS
Creative Director of Special Effects

My area of responsibility on SUPERMAN had to do with the physical and mechanical effects and, in the latter stages, with the miniatures, after Derek Meddings had gone.

All in all, I was involved on the production for just over two-and-a-half years, during which time I went through two or three scripts, two directors, three production designers and four studios. I started at Pinewood Studios originally, then went on to Bray Studios, to Rome, to Shepperton Studios and back to Pinewood. But we didn't really start work until Richard Donner arrived on the scene and he and Tom Mankiewicz got the script as they wanted it (or as Dick wanted it). That was when we could really start getting our teeth into it.

Before that we had been devising mechanical or hydraulic rigs for the Krypton sequence, because Marlon Brando had a contract to start on a certain date and we would have to be ready to shoot his scenes on Krypton. So what we designed and built for that sequence—although the basic design of the set was changed quite a bit later—was incorporated into the final shooting. This was possible because most of what we had built was behind the camera. When John Barry arrived as Production Designer, we went over with him exactly what we had built and utilized it to best advantage in his set.

Colin Chilvers has spent the last two-and-a-half of his 33 years creating, supervising and directing the spectacular physical effects required for "SUPERMAN".



For the destruction of Krypton sequence at the beginning of the picture we rigged hydraulics under the set to make it move as if there were an earthquake, with pieces and huge boxes falling from above and pieces of set even built on hydraulics to make them move and drop. There were a lot of pneumatic tip tanks, so that we could get the maximum of stuff at the top to drop down. Those pieces were made of polystyrene and polyurethane, all covered with front projection materials to give them an unearthly glow. We had something like 16 feet of space below the set so that big crystals could come up through the floor to mark the beginning of the planet Krypton destroying itself. These crystals weighed about half-a-ton each and, as always, one wanted to get the maximum speed out of them coming up through the breakaway floors. Then there was always an element of someone falling down one of the holes that you had prepared.

Most of the mechanical effects in the picture are ones that you are not really aware of because they are meant to simulate a natural catastrophe (such as with the earthquake or the blowing up of Krypton), but even though everything that is going on is supposed to be the result of a natural cause, you obviously have to fake the lot, so we had all this mechanical stuff behind the scenes. We also had a hydraulic rig for the starship that the baby Superman is put into in order to shoot him off Krypton to land on Earth.

The front projection material I spoke of has several uses other than for front projection, and in some of the early designs whole sets were going to be completely covered in it. That idea was abandoned after a while, however, because it was just not practical. For example, if you just lean against front projection material or get fingerprints on it, all that can be seen—plus the fact that, in this case, there would have been a lot of dust and debris falling. Ultimately the whole thing would have been a complete and utter mess, so we didn't use that approach in the end.

The dressing of the main characters on Krypton was done with front projection material, which has an astounding sort of effect when you see it on the screen. Geoff Unsworth made the ultimate use of his fog, and the two things combined looked fantastic.

We used the usual oil-based fog because there is really nothing that you can use to surpass that. It is the easiest, quickest and most economical way to produce fog. Anything else tends to be very costly or dangerous, so you always go for that method. Geoff liked that way of producing fog also, because with the machines that we used he could just let them trickle all day long and keep a permanent fog that he could control the density of.

When we did the fog sequences the stages were always kept tightly closed. Geoff liked to have ultimate control over the way the fog was put in and where it was put in from, in order to get the best effect. We just kept up this general atmosphere all the time, which caused a lot of problems for us because we had to keep filling up the bottles with oil and maintain a man on each fog machine. Geoff placed the machines on all different parts of the stage. He loved fog. But I must say that the effect was worth it in the end.

A couple of times we tried using some sort of flame in front of the camera to give us a kind of shimmer when we started with the destruction of Krypton, but we couldn't use that effect in the end because it didn't work for all the lenses. It looked fantastic through some of the lenses, but with other lenses you got no effect at all. I think it was on the wider angle lenses that you tended to lose the effect completely and rather than try to shoot the whole sequence with one lens, it was abandoned, for it was only the icing on the cake really.

Most of the rigs we had to build for the physical and mechanical effects involved Chris Reeve directly, either on his own or with assorted villians. For example, when Superman breaks through into Luthor's lair we had to make it look like he was literally pushing through the door. So we had to put hydraulic rigs behind to squash the metal, so that it would look like his super strength was pushing through a 4-inch steel door.

We made the wire rigs for his exterior flying, as well. They were not highly complicated things—just safety oriented, more than anything else. We had to use a crane 250 feet high in order to get the

crane out of the shot when we were flying him on wires. We devised rigs that would give us complete control over Chris while he was up in the air and for some of the process work, as well. We built rigs to fly Superman against front projection backings and back projection screens, and so on.

Wires were not actually used to any great extent in the flying sequences—mostly when he was involved with other people, sort of literally talking to somebody else and then turning and flying off and waving goodbye—or landing where other people were involved. The burglary sequence was one where he was involved with another character and had to be on the same piece of film, as it were. We couldn't process him in afterwards. And those rigs (as Richard Donner said to me) went unappreciated, because if you could tell that it was a special rig that he was on, then it wouldn't look as though he were flying naturally.

The rigs which we developed for process flying were mechanical, inasmuch as they were either worked by hydraulics or were mechanical pieces operated by people. Having them operated by people made it possible to get the personal touch into it. You couldn't just put Superman on a piece of hydraulic equipment and push it up and down, because it would not look as though he were flying. You had to be able to have ultimate control over the hydraulics, so that you could make the hydraulic rig move exactly as you wanted it to move. Therefore, it was up to the operator—in conjunction with Chris Reeve, who knew how he wanted to fly—to try to work it out so that he flew naturally, rather than simply being stuck in one place without being able to move.

This involved very sophisticated hydraulics, although, for the flying, we did try to keep the rig as basic as possible. I suppose that there were no more than three rams and a hydraulic motor working at any one time, but these were all worked on electronics, rather than pure manual-to-hydraulic control. As a result, the control we had was almost limitless as far as speed and position were concerned, within the limits of the rams.

When supporting Chris for his flying in front of the blue screen any rams or poles that showed obviously had to be coloured blue. On the blue screen process stage we used various ways of minimizing what you saw by using foreground cutters and so on, all of which was worked out with Dennis Bartlett. But the easiest thing to do was to conceal the pole behind Chris and we made use of that a lot. He was body-moulded for the various angles and positions in which he

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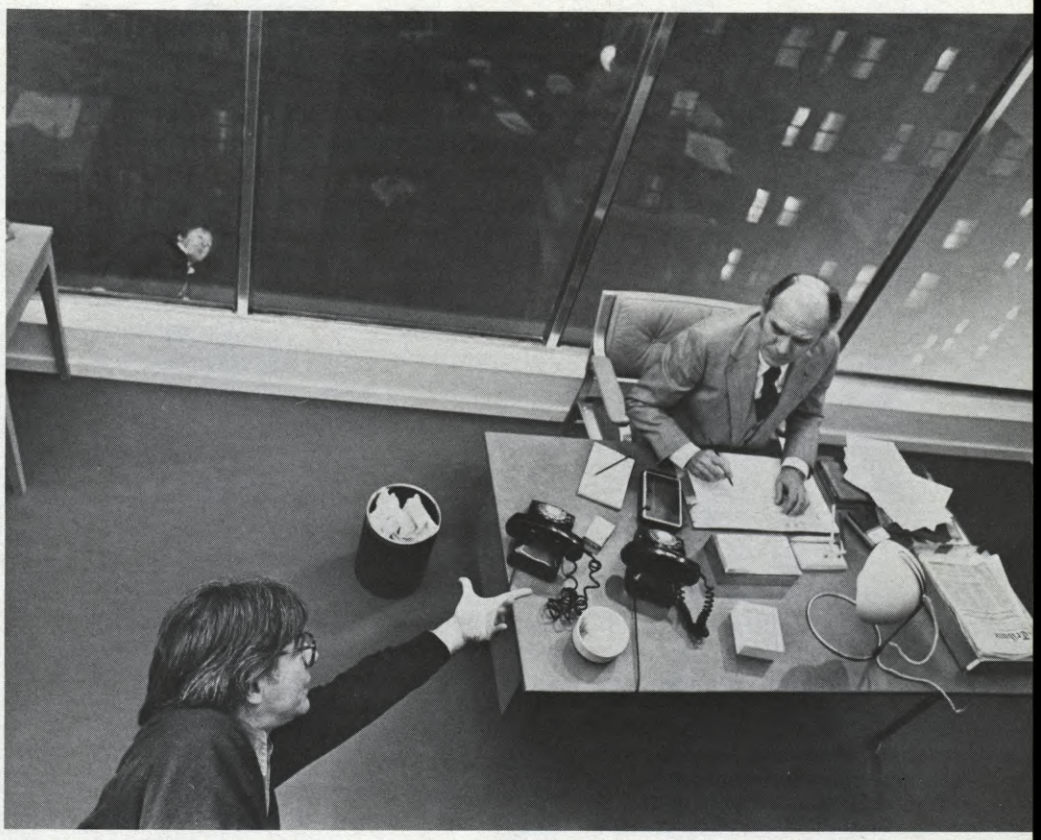


If this photograph looks a bit odd, it's because what's going on in it is even odder. Richard Donner (left) gives stuntman George Leach direction for a line-up in the burglar sequence. A full-scale section of the Solo Building (complete with night exterior backing) was built on its side, so George is, in fact, strapped into his seat and everything on the desk is stuck down, because he is at right angles to the floor.

Donner looks through the camera mounted on Universal Studios' unique "shaker mount", which was built for the film "EARTHQUAKE". A highly sophisticated machine, it can be calibrated to shake intermittently and to any degree desired. Although the movement is basically horizontal, a cam on the front permits varied up and down movement, as well.

OF FLYING AND FRONT PROJECTION

To make Superman not only fly like a bird, but loop-the-loop, soar, dive and spin required extending the front projection technique forward into almost literally another dimension

The enormously complex front projection sequences for SUPERMAN (which included the considerable amount of "flying" featured in the film) were photographed by noted British Director of Photography Denys Coop, BSC. In the following interview, conducted by David Samuelson, Mr. Coop discusses the unique problems, challenges, techniques and innovations involved in this very specialized aspect of cinematography:

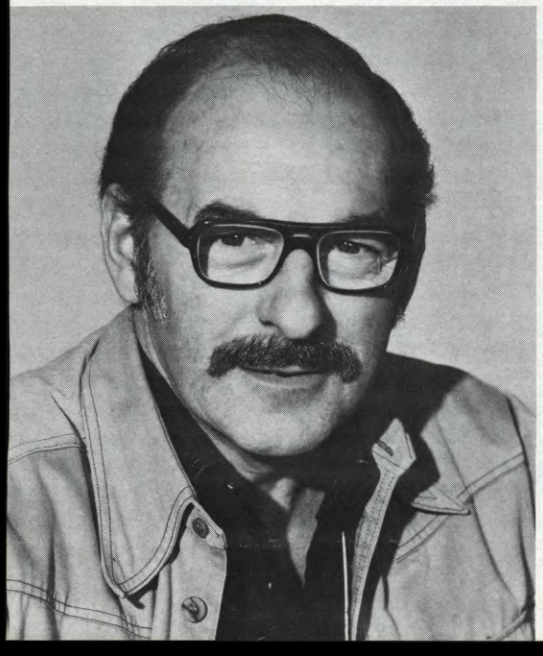
DAVID SAMUELSON: Denys, you have been responsible for the front projection process work on SUPERMAN. How has that differed from other productions which have relied heavily on front projection?

DENYS COOP: Unlike productions that are concerned with machines, flying carpets and that sort of thing, which is accepted in films by most people, we have been faced with the problem of making a human being apparently fly.

To get the human mind to accept the fact that a human being can just take off and fly is much more difficult. So, in order to achieve the completely natural movement, as if he literally were a bird, it became necessary to create a piece of front projection machinery which is completely mobile. Mobile in every sense—with tracks and cranes, panning, tilting, zooming, every single movement—because we have been faced with having a virtually stationary person and we have had to make him travel. So we have had to be thinking in reverse all the time—moving the camera, creating the illusion that you are following, in fact, a person who is doing the movement. The aim right from the very beginning was to build something very, very small and lightweight, and Jan Jacobsen produced a projector with Wally Veevers which is a very small, normal 35mm format unit with a 320-watt light source which has a very complicated reflector and lens system in order to get the maximum light out of a small source—and it has proved to be very efficient. We have got up to about an 80-foot-wide screen, which is satisfactory with that unit.

We started with a prototype machine—and we have had to build it up as we have gone along—and now we have completed the shooting of Part I and have a very efficient piece of machinery. But pieces have been added almost the entire time because we would constantly come across new problems. We really haven't learned anything new about front projection. It's still a front projection system with all the problems that involves—fringing and so on. And the first rule which we have learned never to break is that the camera, mirror and projector must be absolutely perfectly aligned and this was checked thoroughly every morning. None of this has changed from before. All we have done is to make it highly mobile, which it really never has been before, I don't think.

As Creative Director of Process Photography, distinguished Lighting Cameraman Denys Coop supervised his own unit in filming spectacular flying scenes with front projection.



QUESTION: Let's just talk about the rig for the moment. Your plates are on 35mm anamorphic, are they not? There had been talk about using Vistavision. What is your feeling on that?

COOP: Yes, my feeling is, without any question, that we made a mistake, in my opinion, in not using Vistavision in the first place. The improvement on picture definition and grain, and the overall result, would have been much better had we been able to use a Vistavision format—but coupled with a partial squeeze going back to the old Technirama or Ultra-Panavision, which was 65mm with about a 1.75-to-1 squeeze, which gives you, in effect, that Panavision format.

QUESTION: If you could have managed the negative process easily, would you have gone to 70mm for your plates rather than Vistavision? Is there any advantage of one over the other—other than the laboratory facilities?

COOP: I don't know the answer to that at this moment, because it involves so many other things. I mean processing is one, availability of stock is another, and I feel somehow that the Vistavision system is probably going to be the best in the end.

QUESTION: I believe you had two distinct front projection rigs—one made by Roy Moores, which I believe is a lightweight transportable unit, and which will go on an ordinary camera dolly or crane and is really not so much more cumbersome than, say, an old-fashioned blimped camera—and the other one is the Zoptic system which incorporates two zoom lenses. Would you like to describe the two systems, or are they combined into one?

COOP: In fact, on SUPERMAN Part I, they were two separate projectors. As I said earlier, the projector that we used on the Roy Moores rig was the one that Jan Jacobsen developed, and the projector that we used on the Zoptic machine was a Neilson-Hordell projector. In fact, the system is basically the same. The only difference is that the Zoptic incorporates the use of two zooms, linked together both in movement and in exposure, in order that as you zoom in towards a foreground object the picture projected on the screen is reduced at the same rate, so that, in effect, the background never changes. The ultimate effect is that the foreground object is coming either towards you or away from you and the background and gives a much better impression of movement.

What Zoran Perisic has done, in fact, is to develop a system of graduated exposure on the projector, so that as the picture is reduced, the stop is altered to compensate. So you have absolutely no change of exposure on the background as the picture is reduced. It has proved very, very effective, but not just on its own. I mean it has been used with this very mobile rig. And so it has added another dimension to the movement which would not have been possible, had we not had the twin zoom set up

and, in my opinion, it has made a big difference to the look of the flying. It has become completely free.

QUESTION: The fact that you are shooting anamorphic—has that made it appreciably more difficult to cope with?

COOP: Well, yes, of course, because immediately one is faced with anamorphic zooms, which obviously are not quite as good as a prime lens, and also there is the problem of getting sufficient light through an anamorphic zoom on the projector. It has restricted the size to which we could go. Although we have used 5:1 zooms and we have gone out to almost the forty that the zoom will go to, we have had to stay slightly within that in order to stay within the camera lens. Yes, of course, with anamorphic zooms it means, in effect, that you have a plate which in the first place is shot anamorphic, you are projecting through an anamorphic zoom, then you are rephotographing it through an anamorphic zoom—and there is a tendency, if you are not extremely careful, to get slight fall-off in the corners.

QUESTION: But, in fact, you managed to avoid this?

COOP: Yes, by slightly enlarging the size—by slightly coming in on the camera zoom and eliminating the very corners of the projector, we found that we have been able to keep it down to a minimum.

QUESTION: Can it happen that the two zooms get out of sync or do you have a certain amount of latitude in what you can do?

COOP: Oh no, in principle they should stay in sync, but I have found, through various problems that have come up, that I have been able to work with one of the lenses at a different length to the other. In fact, I have done shots where one zoom didn't zoom at all. I only used one of the zooms. I locked off the projector zoom and just used the camera—or whatever suited our purpose. So you can be very flexible. It's just a case of trial and error really with these sort of things because they are pretty new.

QUESTION: Yes. And the Roy Moores front projection rig—what was special about that, other than its size?

COOP: Well, other than the size and the very small light output, both of these mobile units have a secondary screen which is carried on a framework above the camera, reflecting into the back of the mirror. We can photograph this by using a diopter in order to keep it in focus because, of course, it is much closer than the main screen and one also has to reduce the exposure with neutral densities, or graduated neutral densities, because again it is much closer than the big screen. It is a very complicated system, but a very effective one—possibly for matting out things that you don't want, if you are off the main screen. If you haven't got a big enough screen you can supplement it by using your supplementary screen for a portion of the exposure—whether it be top, bottom, sides or anywhere else. You could overlay, say, the top half of a picture if you want to obscure means of support and, again, it's a case of application. It is a problem to match the join between the two, but again, Jan Jacobsen, for an ordinary spherical system, had a very good adjustable graduated filter—like the old adjustable diffusion which one slides over the other and adjusts by just looking through the camera and winding until they match exactly. But that we haven't yet actually achieved on Panavision because it involves something so much bigger—and we just haven't got round to that yet. What, in fact, I have done is to use a white screen above the mirror, reflect that into the back of the mirror—and use it in a very similar system to the Lightflex system that Gerry Turpin developed, which is reflecting any sort of light, coloured or anything else, in through the back of the mirror and so overlaying the picture with whatever effect you want to put on.

Actress Margot Kidder (Lois Lane), Assistant Cameraman John Campbell, Operator Peter MacDonald (behind camera), Process Projection Consultant Wally Veevers and Director of Photography Geoffrey Unsworth, BSC, shown on the set with front projection unit developed by Jan Jacobsen and Veevers. It is a lightweight, mobile, easily transportable rig that will fit on an ordinary dolly or crane.

I have had occasions when I have had to increase enormously an exposure to give an effect of terrific heat, or something like that, and to be able to control it completely—independent of the foreground and the actual front projection. I have been able to do it through the back of a mirror off this white screen, and I have really used it constantly throughout the picture for control of contrast and by adding little areas of colour, like the warm glow of a city, coming up from underneath. For all of these types of things, it's a much smaller, much more controllable way of doing it than having to add it onto the main screen or onto a plate or that sort of thing.

QUESTION: It has the advantage, I believe, that you can actually see it through the camera as you are shooting, so that there is no problem of matching it up. It is just as your eye sees it.

COOP: Oh, yes. It is entirely a system which the cameraman applies himself. You look through the camera and it's like in the old days when you were setting a filler light in black and white, you would look through the camera and bring it up

Continued on Page 76

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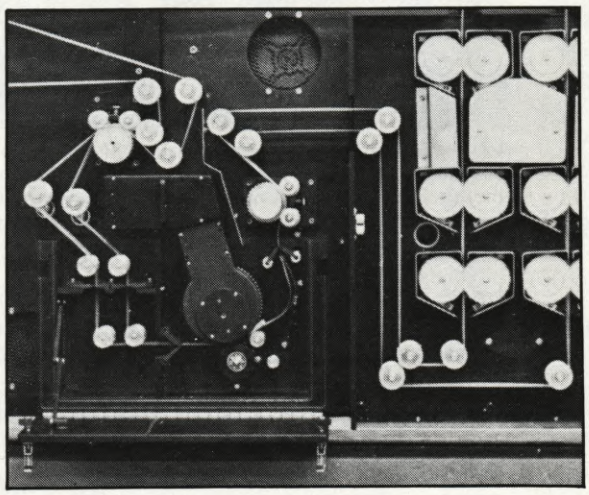

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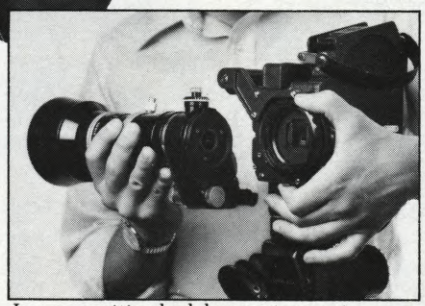

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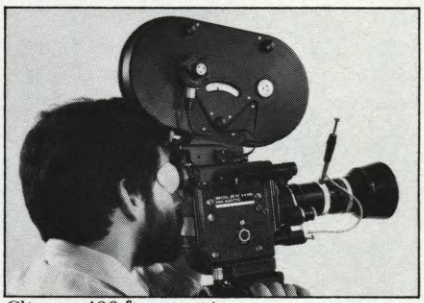

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TWO WORLDS IN MINIATURE

The miniatures schedule called for blowing up the planet Krypton—then, back on Earth, bursting Boulder Dam, shaking the Golden Gate Bridge to bits in an earthquake and toppling a helicopter from a skyscraper

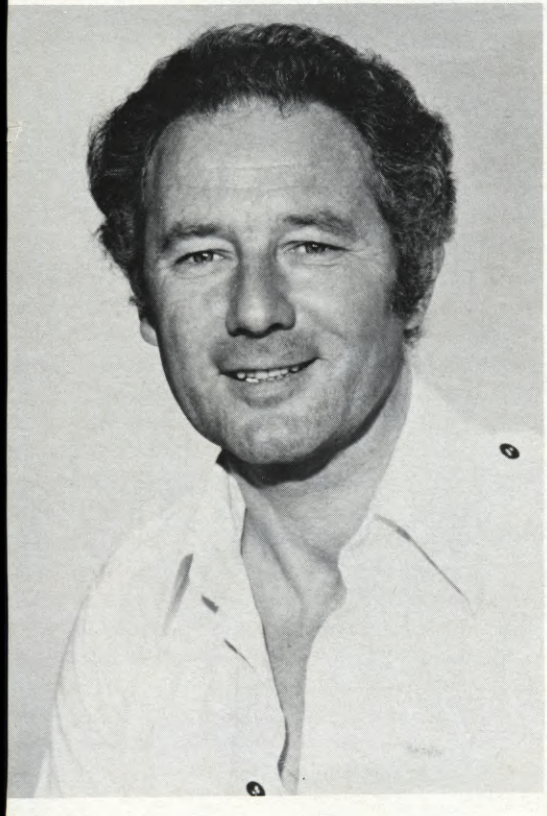
By DEREK MEDDINGS

Dick Donner had asked me several times to do the miniatures for SUPERMAN, but I was busy initially on the latest James Bond film, after which I went onto STAR TREK (before they decided to do it in Hollywood). As a result, I started a bit late on SUPERMAN.

The term "miniature" is a relative one and often misleading. When someone asks me, "How big are miniatures?", my reply is that they can vary in size from a few inches to scores of feet, depending, of course, on what you have to do with them and the scale which that requires.

For example, the miniature section of San Francisco's Golden Gate Bridge which we built for SUPERMAN is 60 feet wide—hardly "miniature" in terms of actual size, but decidedly so in comparison to the size of the real thing. In this case, the bridge had to partially collapse in an earthquake. We had a school bus that drives onto the bridge when the earthquake starts and then the bridge starts to break up and the school bus hits the side of the bridge and breaks through. In addition, there are collisions on the bridge between cars and various other vehicles. One hits the back of the bus and pushes it a little further over the edge. That's when Superman flies in and saves it.

Sandwiching "SUPERMAN" in between two James Bond film assignments, Derek Meddings still managed to do considerable damage (on a somewhat reduced scale) to a couple of planets.



We did all this with miniatures, except for one small part that was shot at an airfield where we built a road. Obviously we couldn't crack that road, because it was part of the airfield runway, and we couldn't see over the edge of the bridge because, again, it was built flat—but we just needed some shots to take the full-size bus onto the bridge and have various cars colliding. But when we did the main shot, it was all done with miniature vehicles. I suppose the largest one was the bus, which was three feet long. The cars were scaled to the size of the bus. The whole thing was done as a miniature, even the shots when you look over the side of the bridge and see the water below and a tug comes out from under the bridge. All this was filmed on the lot at Pinewood Studios.

As I've said, we built quite a large (60-foot) span of bridge that we used for the long shot, where you see vehicles crossing. Then the bridge starts to shake and vibrate and pieces start dropping off. We also put Superman (Chris Reeve) up on a wire and flew him towards the bridge as it starts to break up. So Chris was full-size, but the bridge was a miniature—all in the same shot.

The camera was set up so that Chris was really a long, long way from the bridge. We had in picture just one of the main towers of the bridge and a span going out to the right hand side for about 60 feet. We didn't show the city in the background, because that would have created one hell of a problem. We had already shown it in the for-real establishing long shot made from a helicopter, but the closer (miniature) cuts were all shot from low down.

As for the bus, the rather large (three-foot) miniature had to exactly match the full-size practical bus which they had shot in America—as did the full-scale duplicate that was used for the portion of the sequence that was shot at the airfield in England.

For the opening sequence of SUPERMAN, at the climax of which the planet Krypton is destroyed, we built a very large miniature which filled the F Stage at Pinewood. It was about 20 feet off the ground, because it had very deep gulleys in it and we had to go down in amongst those gulleys and track along the sides of them as the place was falling to pieces. That's when Superman's father fires the Baby Superman in the starship away from Krypton just before the whole thing disintegrates.

All of the full-scale scenes of the destruction of Krypton had already been filmed at Shepperton Studios. It was after that when we did the miniature long shots of the planet starting to destruct and fall to pieces. It was really like an earthquake sequence on a planet, because the inhabitants of Krypton lived basically underground and there was very little on the surface. It was a very large planet, all chiseled out of white ice. Our part of it was to make all this fall to pieces convincingly. There were explosions, but not fire—just mainly an earthquake type of shaking. Then finally there was the shot of the whole planet erupting, as the Baby Superman sped away on his journey to Earth.

The Krypton miniature set was constructed of plaster and Fibreglas, but all the pieces were built separately and then put together onto the main face of a cliff, so that we could release those pieces and put a lot of rubble and dust behind them. The objective was to have them trail big chunks of ice and dust and lots of sparkly stuff to create the illusion of an ice cliff falling to pieces. It was quite an enormous undertaking. It took the construction boys and plasterers about a month, I think, to build the thing.

For this sequence we had to mount the camera on a special arm, the LOUMA, so that we could get down into the gulleys and track along as they were falling to pieces, and then up the face of the cliff and over the top of the planet and down into the other gulley.

The LOUMA, which was developed in France by Samuelsons and brought to England for our shooting, is like a lot of other pieces of special equipment that are constructed: they are very useful for certain shots and, on this occasion, there was no other way we could have gotten the sort of movement required. We needed to be tracking along as the camera dipped down over the face of a cliff, then along a gulley, then up the other side of the cliff, then across the surface of the planet and, finally, down into another gulley. I think the LOUMA is a fantastic piece of equipment for doing that sort of specialized job.

It took a bit of practice in order to learn to operate the LOUMA precisely, because we were shooting at very high speeds and the operator, who was far away from the camera, was operating from a television monitor. He had to get used to operating while looking at the television screen, but after the first week he managed to master this. Then, too, the video playback is never as good as looking through the camera itself, but it gave us enough to see that the shot was more than acceptable. It allowed us to view the take and decide whether we had to go again on it, because there were so many things happening. I mean, we had about 20 people doing things and they all had to happen as the camera was tracking along. The playback allowed us to check the take instantly. You could see a big chunk of the cliff face falling into picture as you went by, and you didn't have to wait for rushes the following day to see that you had tracked past the best part as it fell into the gulley.

In addition to the scenes described above, we photographed a 25 by 30-foot section of the planet Krypton miniature, as seen from further out in space just before the whole planet exploded, in order to tie it into all the close stuff. I didn't film the actual explosion, because that happened after I had left the picture to start on the next James Bond project. It was done by somebody else, basically as an optical.

In order to film the bursting of Boulder Dam, we constructed a miniature which, I suppose, measured about 20 feet from top to bottom. This, too, had to be a perfect match, because they had already filmed establishing shots of the real Boulder Dam in America. So, having gathered a lot of material and photographs of Boulder Dam, we built the miniature on the paddock tank to give us the water over the top of the dam when we finally blew it.

What I wanted the audience to see were shots of the dam actually bursting. There is so much water that is contained by that wall that if the dam were really to burst you wouldn't see the water level drop, like emptying a sink. We wanted to give the impression that there were millions and millions of gallons of water that were going to be released by this dam bursting. So we couldn't just have a tank and then build the dam as though we were emptying a tank from behind the dam. What we did was get about six huge water pumps and we pumped the water from the paddock tank up to the level of the dam. We then constructed something like a platform made of aluminum, so that when the dam burst, the water was pumped over the edge of the dam. It continued to pump a huge volume of water without the level dropping—which meant that we could hold the

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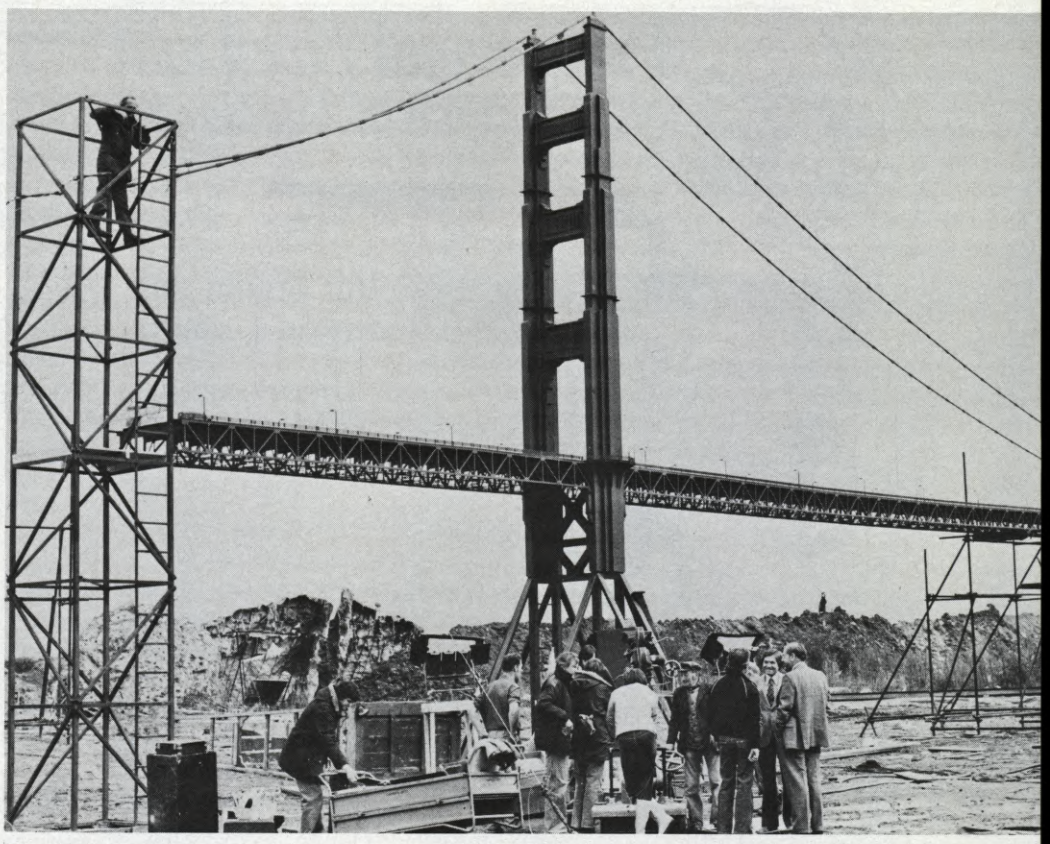
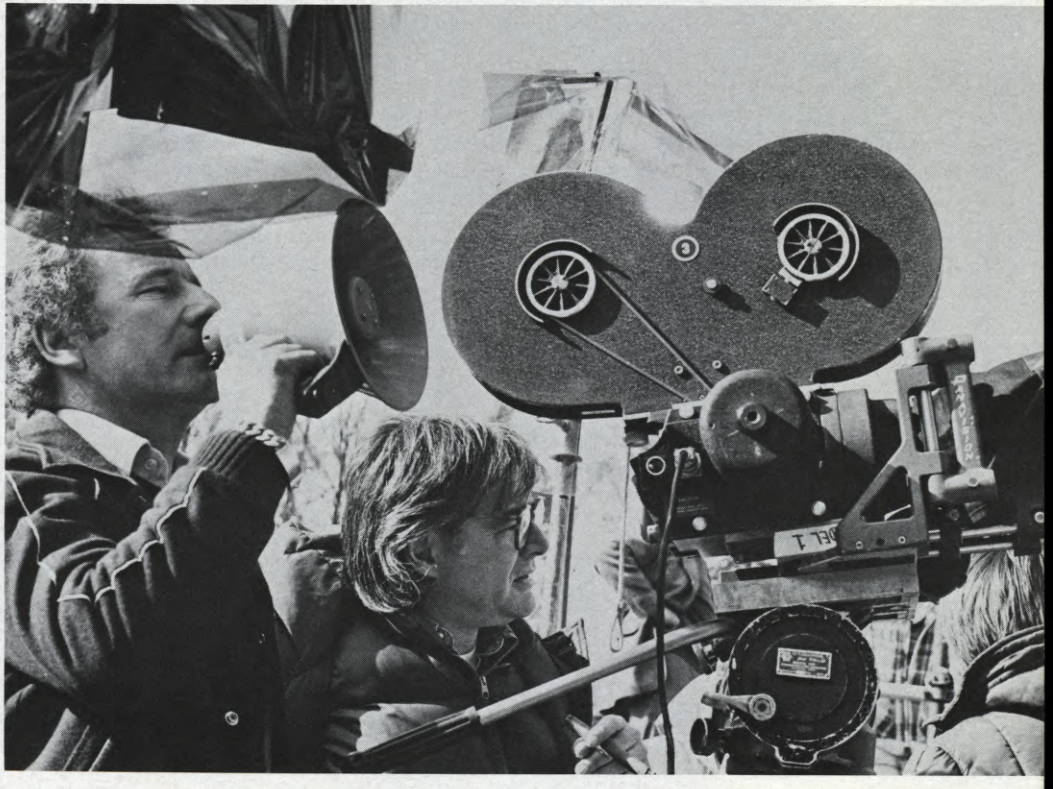


There are miniatures—and then there are MINIATURES. This one, a 60-foot model of San Francisco's Golden Gate Bridge, had to be caught in an earthquake during rush-hour traffic, with many vehicles piling up and a bus crashing through the parapet (to be saved from plunging into the drink by Superman, of course). Constructed with a relatively delicate foundation (to permit the use of "soft" explosives), the elaborate model met its doom by being toppled by a gale—fortunately, after photography of the earthquake sequence had been completed.

Meddings (with bullhorn) prepares to shoot a miniature scene with high-speed camera, while Donner looks on. Although books on special effects almost always include formulas for working out camera speed in relation to the scale of a model, Meddings (who admits to being "no good at math") prefers to work by eye, relying on his years of experience with movement in miniature. He very seldom fails.



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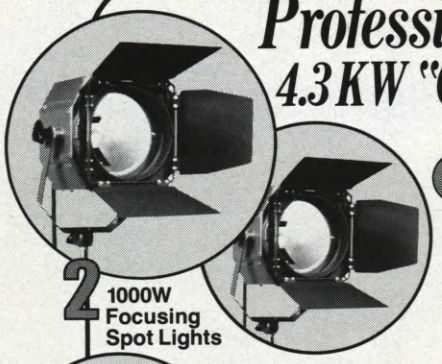

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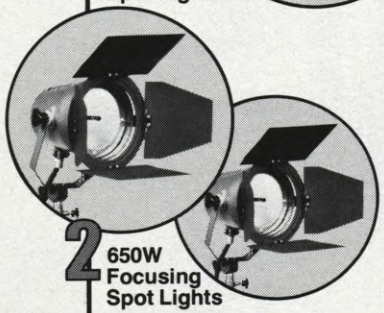

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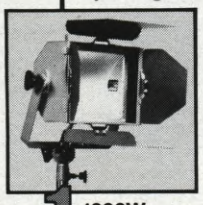

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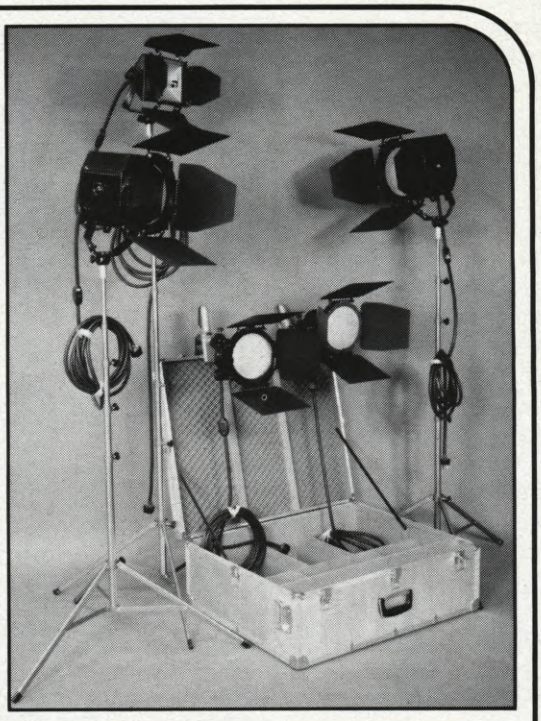

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MATTES AND COMPOSITES FOR "SUPERMAN"

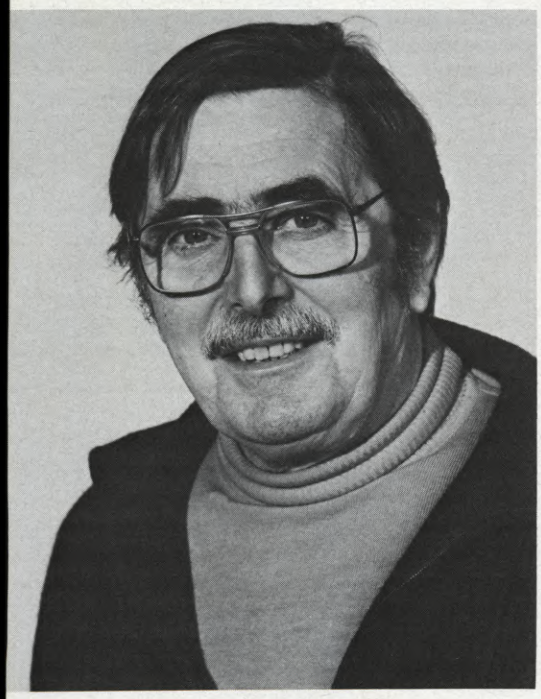
In addition to painting glass mattes and backings, this all-around special effects wizard simulated an atom bomb explosion and found a way to make Superman's cape swirl realistically while in flight

Listed on the SUPERMAN credits as Creative Supervisor of Mattes and Composites, Les Bowie, veteran glass painting artist and all-around special effects wizard, with more than 30 years of background in the film industry, discusses his work with David Samuelson in the following interview:

DAVID SAMUELSON: Les, you have been doing the glass matte work on SUPERMAN. Yet, in recent years, you have been more involved with atmosphere and other visual effects, particularly with explosives—*breaking* glass, rather than painting it. How did you get your start in films?

LES BOWIE: I first started working in the Rank matte department in 1946 and, in those days, Rank had girls being trained (and probably very well) to paint with oil directly onto glass, but they worked so slowly that it took them anywhere from two to three months before they could get the painting to look anything like a matte shot—so one day I said that I reckoned I could do a matte in a day if they would let me have a go. And, in doing it my way, I really did do a full matte in one day.

Creative Supervisor of Mattes and Composites les Bowie used his 32 years of varied special effects experience in many ways on SUPERMAN.



QUESTION: Did you use the same technique they were using?

BOWIE: With one major innovation. I started the business of spraying white water colour paint onto glass, which I used to draw on with a pencil—delineating the composition through the lens of the actual camera we were shooting with, so that we had no discrepancies of lenses. It was just a matter of painting quickly then—I had previously been a scenic artist—and I really did paint that first matte shot in one day. In fact, the actual marry-up was done that same afternoon—so that was the beginning of that.

As we expanded, I became chief of the matte department. It was at that time that Albert Whitlock came along. He had been a senior artist at Shepperton and came to Pinewood to join me, where he used my method of matte painting—painting oils on water colour paint on glass. Then in 1950 I left Rank to start up on my own and, after a while, Albert went to America. With the years I gravitated into doing all other forms of special effects, like fires and bangs, and very gradually had more people, until there was a time when I had 75 people working for me.

Now that I'm getting a bit older, I don't want to worry about having to have masses of equipment lying about or keeping people employed. And as I've found that matte work seems to be coming back more and more, I think maybe I have come back at the right time—hoping secretly that because I have come back we shall be getting more matte shots.

QUESTION: Are you still using the same method that you pioneered 30 years ago?

BOWIE: Fundamentally, but we have learned a few things—and, of course, Eastman Colour has come out since then. The cameras are better, the film stocks are better and there are now more people who know how to do it. I find these days that while the old art directors used to know all about matte shots, the young ones don't seem to know about the technique—or trust it too much. Very often if you say to somebody, "Look here, the easiest way to overcome that problem is to paint it,"—they will say, "Good lord—a painting? You can't have a painting in my film." But they don't realize that the matte painting should never look like a painting. It should be a top, or whatever part of the scene you are matting, and it should be camouflaged to look like the rest of the scene.

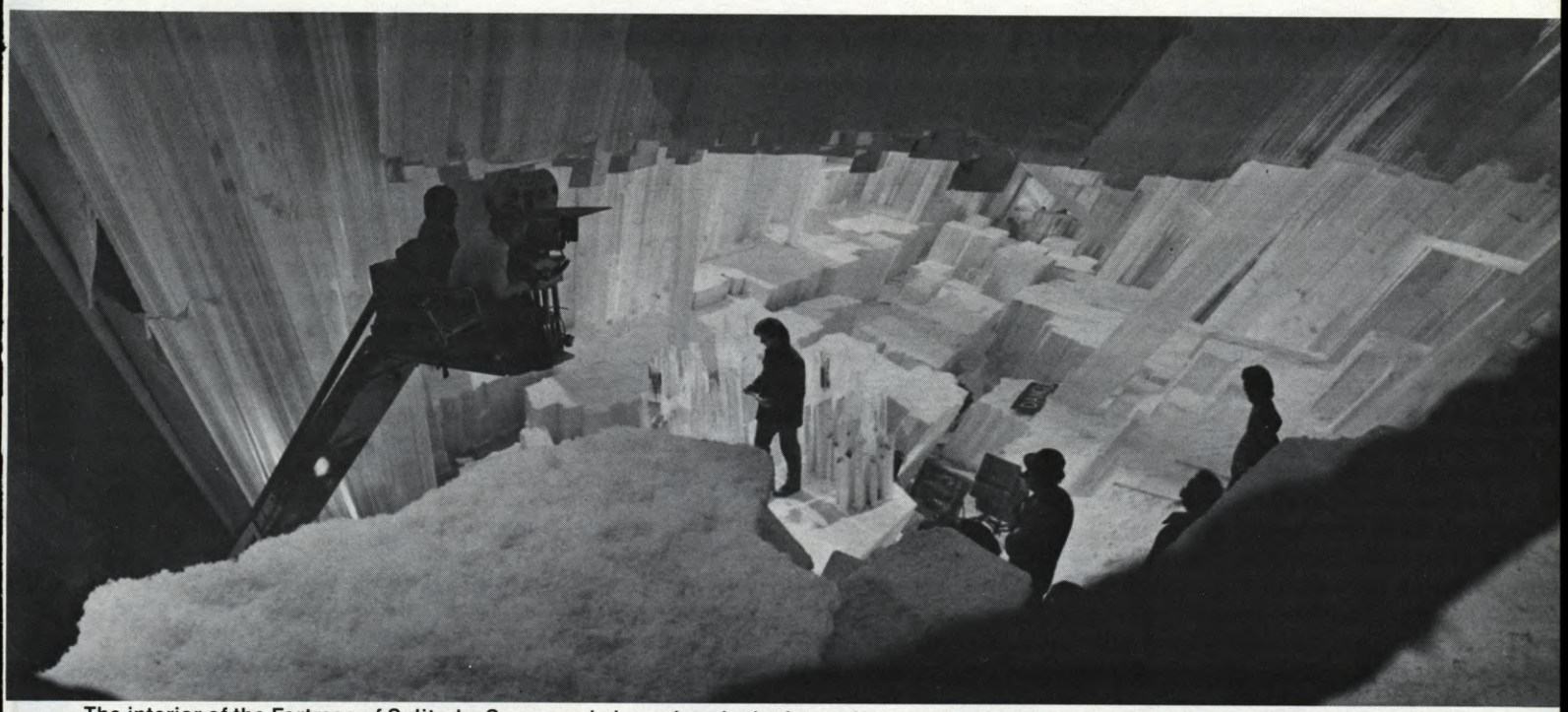
I have found in the past that a lot of matte artists paint too beautifully when they do this kind of painting. They put in lovely clouds and marvelous composition, but I say that when you go out on location to shoot a castle, say, the clouds are not always there and, because of the action, the castle doesn't always end up in the middle of the picture. It might be off to one side.

I play down the composition and things like glorious skies and I don't make trees look too beautiful, because all I worry about is that it should look like the rest of the scene. I feel that a lot of matte artists don't do that—and that's why you can recognize a lot of paintings as matte shots. Another thing is that if the live action shot is unsteady, it's fatal—a dead giveaway.

QUESTION: When you photograph your glass mattes, do you do it on the original negative that photographed the live action?

BOWIE: We have done that a lot on SUPERMAN. It's all right on interiors, but I've found that if you are on location, you have to have one take which the director can see at rushes the next morning and which the editor can cut into his film—even if it doesn't have the matte top on. They have got to have that purely to cut in for action. Then you have got to have a long piece for tests, so you really do have to have three good takes, with a bit of test in the front of each one. That's a lot of film—and if you've got a chunky cloud and have to wait for the sun to go in and out, then you've got the business of looking at your watch and thinking, "We've got two minutes there. Let's go!" It's a bloomin' nuisance.

The dupes these days are of so much better quality than they used to be that I think that, on location, it is much better to talk people into a dupe principle. In that way they can see their shot the next morning at rushes. You get the colour separations, and from that you can go time and time again, and you've had only that one film. The bit that you marry-on is the take that you want. While I think that



The interior of the Fortress of Solitude, Superman's ice palace in the frozen North, was constructed on Shepperton Studios' giant silent stage. Here Dick Donner and Operator Peter MacDonald, on top of the Sam-Mighty crane, prepare a shot of Jeff East, the young Clark Kent. This massive set is only one of many for which Les Bowie had to paint a glass matte in order to extend the background.

for interiors you can sometimes do it on the original negative, I prefer, for my own reasons, to do it with the dupe method.

QUESTION: But in fact you are using colour separations. You are not doing it on an internegative, are you?

BOWIE: We use colour separations because they are much better. They enable you to easily vary the colour—make it bluer or greener or whatever. With colour separations you can play around with the top and bottom of the scene individually. If you do it straight onto the original negative—and do tests and tests and tests—then when it is graded, it goes up and down overall. If you do it with the three-strips you have much more control over it. The quality is better, too.

QUESTION: The system that you've employed on SUPERMAN of using preferred perforations for lacing up the camera—has that made a difference in the steadiness between the components of the matte scenes, in your opinion?

BOWIE: Well, this is Roy Field's control system, and I agree with him. On this film we have had the perforations looked at by an expert, and when he's said they're okay we haven't had any trouble with the stock. And, as our camera is steady, we haven't had any movement trouble at all.

QUESTION: How many painted shots have you made for SUPERMAN?

BOWIE: Well, I haven't counted them, but I would say approximately 40. About 30 of those were glass shots, but I have also painted skies and backings and photographed them, as well. We've painted all sorts of scenes, including the atom bomb, Superman's view looking down at Earth, models and bits of planets.

QUESTION: You have, of course, had to work closely with Geoff Unsworth, who uses a lot of smoke as atmosphere, as well as fog and diffusion filters on the lenses. Has this presented a problem in marrying-up your mattes, or has it been an advantage?

BOWIE: I think it has been an advantage. I like the fog effect that has been achieved in this film—and when it came to the mattes, we've just put the fog on the same as Geoff did. If the set was fogged up to a certain extent, we would then fog up our painting. It does make painting slightly easier.

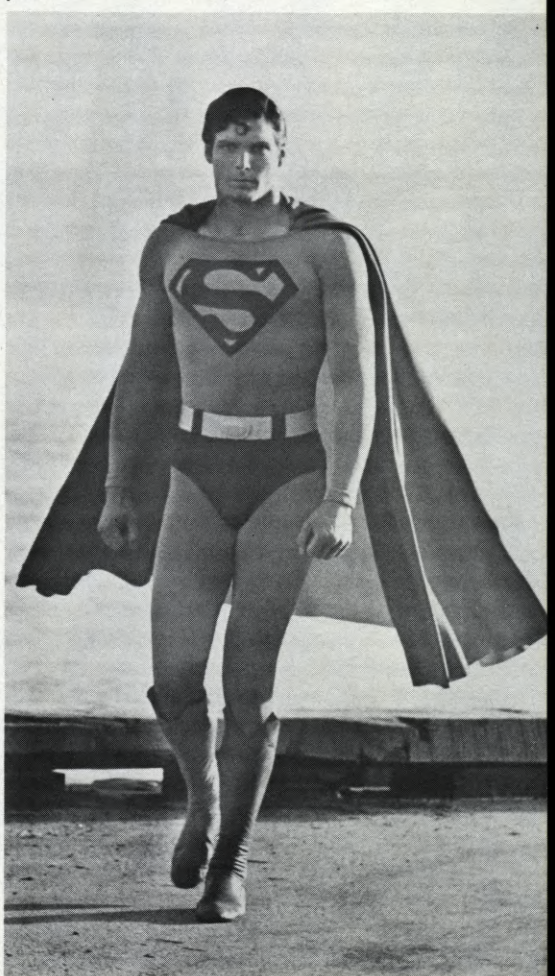
QUESTION: Do you fog the actual painting or fog the atmosphere when you are shooting?

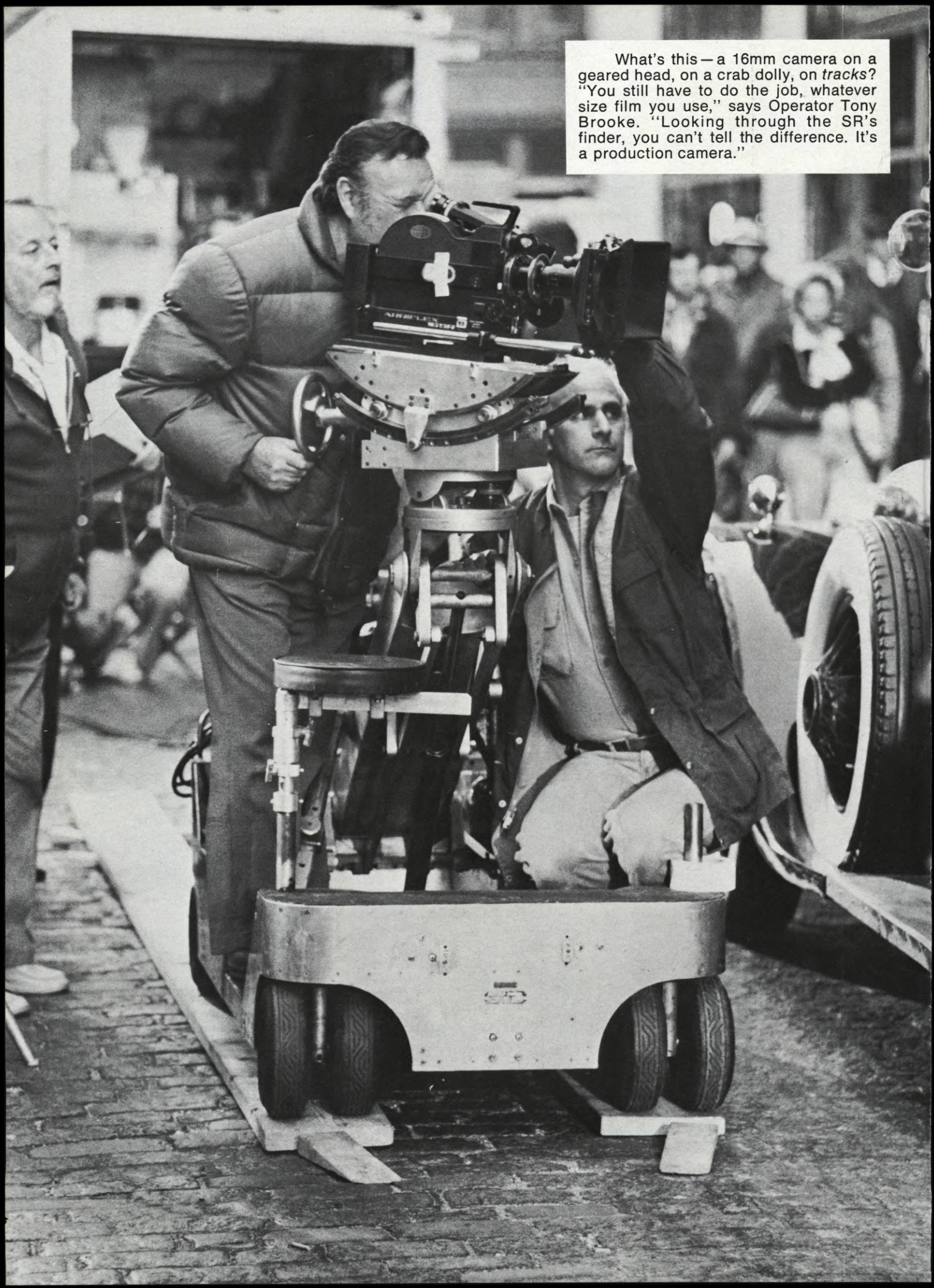
BOWIE: We use fog filters.

QUESTION: How many times do you have to photograph a scene by trial and error before you get the colour

Continued on Page 80

When wind machines failed to solve the problem of making Superman's cape swirl realistically while flying in front of the process screen, Bowie invented a device with radio-controlled rods to make it happen.



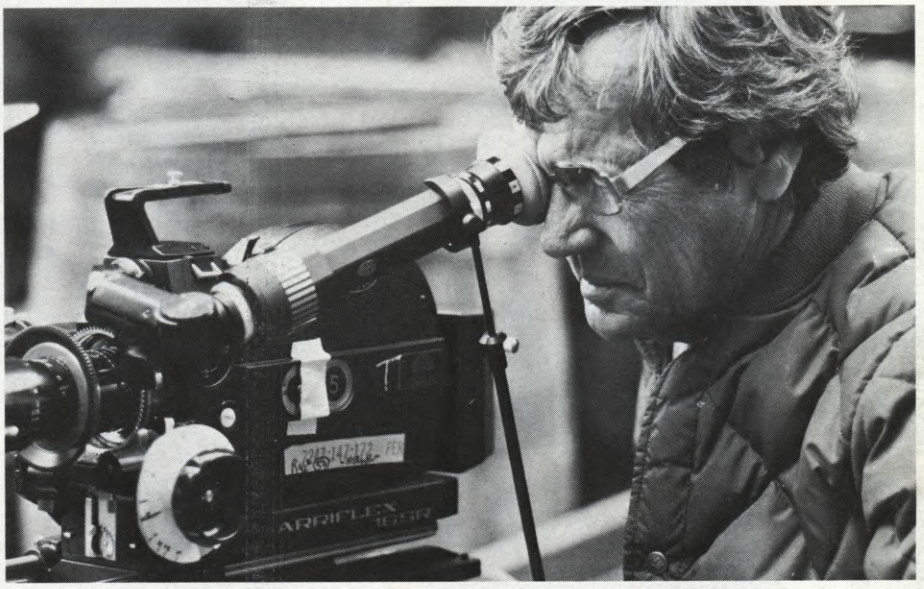


What's this—a 16mm camera on a geared head, on a crab dolly, on *tracks*? "You still have to do the job, whatever size film you use," says Operator Tony Brooke. "Looking through the SR's finder, you can't tell the difference. It's a production camera."

Shooting a two-hour CBS Special in 16mm:

"We shot the whole picture as though it were 35mm," says Jack Priestley.

Director Ralph Nelson with Jack Priestley. "When you see this picture on the TV screen," says Mr. Priestley, "I defy you to tell whether it's 35mm or 16mm."



Jack Priestley lines up a shot. Note white follow-focus marking disc and finder rod. (Rod holds finder stationary when you tilt.)

"After a while, you forgot whether you were shooting thirty-five or sixteen, or whatever. It was just *the camera* sitting there."

That's Director of Photography Jack Priestley, A.S.C., talking about making *You Can't Go Home Again* for CBS.

"There wasn't a hand-held scene in the whole picture," says Mr. Priestley. "And we weren't pressured for time—it was like working on a feature."

"I ran tests before we started...was glad to have the Zeiss fast lenses. All our night exteriors we shot at T1.3. And we shot most of the interiors at T2, to get maximum effect from our low-contrast filters."

Shooting from a window, Tony Brooke uses the 16SR finder on the *right* side of the camera.

"16mm isn't fully accepted yet. Partly, that's because there hasn't been a 16mm camera adequate to *handle* a feature," says Mr. Priestley.

"But this Arri SR is studio quality. For example: we shot some closeups three feet away—and, I'm telling you, you couldn't hear that camera run."

First Assistant Richard Reis positions a flag. "That camera really paid off on this job," he says. "It's a pleasure to work with."

THE ULTIMATE IN OPTICAL ILLUSIONS

Travelling mattes, optical reductions and enlargements were all in the day's work when creating magic for SUPERMAN

Roy Field, Creative Supervisor of Optical Visual Effects for SUPERMAN, was interviewed as follows by David Samuelson while his work on the production was still in progress:

DAVID SAMUELSON: Would you like to tell me what your area of responsibility on SUPERMAN is?

ROY FIELD: I have been responsible for all of the optical work throughout the picture, and that involves quite a high proportion of the footage. The work entails the making of dupe negatives, so anything that is not first generation becomes my baby.

QUESTION: Can you discuss the techniques you've been using?

FIELD: We've devised many techniques—usually based on old ones. My principal concern throughout the production has been with trying to raise the level of quality, because a dupe negative is obviously one generation away from the original. We have been faced with the problem of trying to hold it to that one generation, without having to go to two.

Since a major portion of SUPERMAN is pure fantasy, opticals expert Roy Field was called upon to use all of his considerable experience—and then some—to create the required effects.

Of course, it would be easier to do most of these effects in two generations, but the quality simply would not hold up on an anamorphic screen. So we have had to devise methods and means of holding everything to one generation wherever possible—and we've managed to do that throughout 98% of the picture.

QUESTION: On the original negative or through CRIs?

FIELD: We've used all sorts of techniques—CRIs, interpositives, internegatives—even back to the old three-strip system of colour separations (blue, red, green). We've used a lot of those. Whenever a shot involves an optical I work out the best technique for achieving the desired result—or sometimes a combination of techniques. Just a little bit of work has been done on the original negative, when that was possible—but we did face problems of combining shots made at vastly different times, since this production has been going on for such a long period of time. You might shoot components for a scene months or even years apart. Therefore, we can't go for the original negative. We have to make a dupe, and there is no set sort of system. We use whatever system is best to meet the requirements of the scene.

QUESTION: So in the first place, you've had to ensure that whatever has gone through the camera has been a perfectly perforated piece of original negative, guaranteeing even more precise registration in the camera than usual—isn't that so?

FIELD: Yes, indeed, and your company has been involved in that. I started this picture by adopting certain techniques to ensure steadiness—techniques which I first used in Russia on THE BLUE BIRD. We found that they worked very successfully, so on this film, from the very beginning, I made sure that, firstly, we had a steady camera (which you yourself supplied) and secondly, that we threaded up on the best perforations to ensure steadiness. By that I mean that when the pins are located in the perforations at the instant that the shutter opens, the picture is absolutely rock steady. Jack Greenfield, of the Pinewood camera department, has a very good way of actually testing out perforations and selecting a good, snug fit. We have shot many thousands of feet like this and, touch wood, we have not had one unsteady shot. Since we have been shooting over a long period of time—in Canada and America, as well as in England—it has been essential that every piece and component be absolutely rock steady.

We have also, of course, used the same pins in the printers at the labs, in order to maintain the same pin registration system right the way through, and we have had no problems in that area. We have combined sometimes as many as 15 or 16 pieces of film, using these techniques, with 100% success. And I thank Kodak very much for their co-operation and yourselves for the excellent cameras you have given us.

QUESTION: Has all of the film been processed here in England?

FIELD: Well, most of it. Some of it was processed at TVC Laboratories in New York, some of it at Technicolor in Hollywood, but most of it at Technicolor here in England.

QUESTION: The blue-backing travelling mattes that you've been responsible for—where have they been done?

FIELD: All of the travelling mattes for this picture have been made in Hollywood by Peter Daniel at Cinema Research; Frank Van der Veer at Van der Veer Photo Effects, and Howard and Darrel Anderson at Paramount. All of them have done extremely good work for us. We've had an interesting problem with the travelling mattes because, as you've probably realized, with Superman wearing blue tights, he's not an ideal subject for blue-screen matte work. So we tackled the problem in reverse. Long before the picture got under way, I started looking at various coloured materials for his costume that would work in a blue-screen travelling matte system. I was looking for a blue-green combination that would provide some feeling of separation. We probably tested up to 30 different materials and selected five with which we might get some sort of matte (not quite the normal matte, but a combination matte) and we eventually brought it down to one that was 100% successful. We then submitted this turquoise-blue to the comic strip people who own all the rights to Superman, in order to get their

Dick Donner lines up a scene with Marlon Brando, Susannah York and the baby Superman, using three Panavision cameras mounted on the same dolly. All three cameras were fitted with special light boxes to reflect light from the costumes, which were made of 3M front projection material. Since scenes like this, taking place on the planet Krypton, were by definition "other-worldly" the visual effects, including opticals, were laid on thick and heavy.

approval of the colour. They did approve it but we still had only a narrow separation between that blue and the blue backing.

When we started shooting, I insisted on a system of complete control right the way through. In other words, we tested the lenses, we tested the film stock, and we came out with just enough separation to make the system work. But we had to keep very tight control, because the slightest deviation would have made it not work. These negatives were then sent to Hollywood where the marry-ups were done, and they have been very good indeed.

QUESTION: Did you have any other problems in regard to the travelling mattes?

FIELD: Well, yes. In order to make Superman fly we had to do a lot of optical reductions, which are very difficult and tricky—and we eventually found that the only way to shift the optical printer to correct moves, as well as to make enlargements and moves in and out, was for me to meet with the people from Hollywood occasionally. At first I would fly to Los Angeles, but Dick Donner didn't want me to be gone that long. So we arranged to meet halfway in New York. I would fly over on the Concorde, which was marvelous. We would go over the problems of a batch of travelling mattes together, after which they would fly back to Los Angeles and I would come back here.

QUESTION: Coming back to what you were saying previously about having to use a turquoise-blue for Superman's tights—you said that worked out well, but for the blue backing itself what did you use?

FIELD: We still used the ultramarine blue, with arcs and deep blue filters. The backing really wasn't a problem at all.

QUESTION: To what extent did you have to blue-out (if that's the word) anything, or put in flags and cutters?

FIELD: We did all of that afterwards optically, and we did a tremendous lot of it, since we were shooting off the blue backings 98% of the time. We've done that with what the Americans term "garbage" mattes, and they use them very successfully in the States. It's essential to have the object well contained within the blue backing. As long as we have enough blue backing around Superman to contain his moves, then they can do a hand matte all the way round, and they are very good and very quick at that.

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Jack Greenfield, of the Pinewood camera department, checks perforations with a master pin during selection of stock having perfect perforations. This was necessary to ensure rock-steadiness of the composited scenes. The same pins were used in the laboratory's printers in order to maintain identical pin registration all the way through.

RAY RENNAHAN, ASC HONORED BY STAR IN HOLLYWOOD'S "WALK OF FAME"

On the boulevard which epitomizes the motion picture industry one of Hollywood's greatest cinematographers is immortalized

Just in time to help celebrate the 75th Anniversary of Hollywood (and, incidentally, the 50th Birthday of Mickey Mouse), Ray Rennahan, ASC, became the 1,699th entertainment luminary to be honored by the Hollywood Chamber of Commerce when his star was dedicated in the "Walk of Fame" at noon, Wednesday, October 11, 1978.

Rennahan's star is located at 6916 Hollywood Boulevard, directly in front of the Max Factor building between the stars previously dedicated to Peter Lawford and Sunny Burke.

According to the American Society of Cinematographers and Apollo Eleven Astronaut Edwin "Buzz" Aldrin, an Honorary Member of the A.S.C., if all of the motion picture film exposed by Ray Rennahan during his career as a movie cameraman, spanning nearly seven decades, was laid end-to-end, it would make a 35 millimeter path to within walking distance of the moon.

Born in Las Vegas, New Mexico, May 1, 1894, Ray Rennahan launched one of the most successful cinematography careers in the motion picture industry when, in 1914, he started as an assistant cameraman with National Film Corporation at Santa Monica Boulevard and Gower Street in Hollywood.

"In those days," the still spry and active octogenarian recalls, "you could learn any of the crafts of the budding film industry."

Between camera assignments, Ray Rennahan learned how to develop the film he shot, edit and splice his own movies, and found time to learn about lighting, props and special effects—newly developed talents which would prove invaluable as his reputation grew.

He served his apprenticeship and paid his dues as a black and white cameraman for Mack Sennett and Christie Comedies shorts, as well as early feature-length pictures.

Rennahan's career and reputation moved into high gear when he reluctantly agreed to photograph and develop the film of a revolutionary new color process perfected by a group of Bostonians under the name of Technicolor in 1921.

Entrusted with developing an outdoor as well as indoor color filming technique, including extreme closeups, Rennahan was asked to make a two-reel version of Madam Butterfly to be entitled, "TOLL OF THE SEA".

Finding the footage too good to cut to only two reels, Rennahan shipped a five-reel finished feature film to Boston, and Technicolor sent it to Metro in Hollywood for release.

"TOLL OF THE SEA" was an instant hit as a special feature in early movie theatres throughout the country and Technicolor, realizing a potentially large mar-

Ray Rennahan's star in the Hollywood Walk of Fame, before and after its "unveiling". (BELOW LEFT) Mr. Rennahan's proud grandson and namesake, attorney Ray Moore helped celebrate the memorable occasion. (RIGHT) Among the Guest of Honor's many colleagues present were (left to right): Karl Struss, ASC; Sam Leavitt, ASC; Robert Riley; Milton Krasner, ASC; Ernest Laszlo, ASC; Lloyd Ahern, ASC, and Charles Clarke, ASC.

ket for color pictures, quickly moved to Hollywood with Rennahan as its cameraman.

Over the intervening years, Ray Rennahan was the Director of Photography for twenty feature movies in two-color and more than 300 in three-color, as well as more than 500 color television episodes.

"BECKY SHARP", the first all-color motion picture to be released, was filmed, developed and edited by Ray Rennahan.

He was assigned by Technicolor to go to England to film the first color picture to be produced in Europe—"WINGS OF THE MORNING".

When on loan to a studio or producer by Technicolor, Rennahan was free to negotiate his own deals and was the Director of Photography for nearly all of the early color features produced at all of the then major studios in Hollywood—including MGM, Warner Bros., 20th Century-Fox, Paramount, Goldwyn, Selznick, Wanger and Disney.

Nominated for twelve Academy Awards—including "FOR WHOM THE BELL TOLLS", "LADY IN THE DARK", "DUEL IN THE SUN", etc.—as Director of Photography, Ray Rennahan won two Oscars for "BLOOD AND SAND" and "GONE WITH THE WIND".

Considered Hollywood's premiere color cinematographer, Ray Rennahan has garnered more awards and recognition than nearly any Hollywood movie cameraman in a career that ended with his retirement from Universal Pictures in 1972.

A longtime member of both the Academy of Motion Picture Arts & Sciences and the Academy of Television Arts & Sciences, Ray Rennahan is one of the founders, Past President and Secretary—enjoying numerous terms of office—of the prestigious American Society of Cinematographers.

Ray Rennahan is listed in *"Who's Who In America", "The Bluebook Of England", "Who's Who In California"* and *"Men Of Achievement in England"*. ■

Mr. Rennahan reminisced briefly about his almost seven decades as a cameraman and thanked his friends for sharing this happy day with him. During his long and illustrious career, he became unofficially known as "Mr. Technicolor" because of his lengthy association with that company and its process. (BELOW) Mr. Rennahan displays the handsome plaque presented to him by the Hollywood Chamber of Commerce in commemoration of the occasion.

MECHANICAL SPECIAL EFFECTS FOR "SUPERMAN"

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was to fly—on his back, his side (right or left) or his stomach—and, therefore, you had to fit the body moulds onto the rigs, with mountings in different positions. So there were endlessly different body moulds on which he was supported.

The problem of making his cape swirl out as though he were flying was one for which Les Bowie finally came up with the answer. It was basically a mechanical system that he used to wear in his costume to make the cape flap. Otherwise, because there were so many attitudes in which you wanted Superman to fly, you would have had to completely ring his area with wind machines. However, wind machines are something over which you don't have much control, because a bladed wind machine tends to turn the air, rather than give you a straight blast. But they are the strongest wind machines; you cannot get a linear fan that will give you the same sort of output as a bladed fan. In the beginning the problem (using just wind machines) was that the cape used to swirl underneath Superman's body, but the refined and radio-controlled rig that we built (as per Les's ideas), when combined with the wind, worked out reasonably well.

The cape-swirling device was battery-powered—which meant that it could be used under any conditions, whether he was flying outside at night on the back lot supported by wires, or on the stage with the hydraulic rig. It was completely self-contained within the body pack that he wore.

We use radio-control (as on the cape device) only when there is no alternative. Personally I never use it where there are any explosives involved, because I just don't think that it is sophisticated enough to make sure that you are 100% safe—so, rather than not be 100% safe, I won't use it. But in the case of some miniature Supermen that we built, we radio-controlled them so that we could get movement into them. The cape, as I've said, was radio-controlled and they used radio-control a lot on the miniature model work where it did not directly involve anyone's personal safety.

There were various sorts of explosives used in SUPERMAN. We used them a lot on the miniatures that travelled to and from Krypton and there were a lot of explosions having to do with planets blowing up, and so on. There were also some minor explosions that we did for SUPERMAN PART II, which involve the villains. In PART I there were not really any explosions that directly affected the actors.

The helicopter sequences for SUPERMAN were shot partly in New York, where they had a real helicopter landing on a roof to pick up Lois Lane, who is off on an assignment. The helicopter crashes and hangs over the side of the building and Superman saves her. This involved us in some heavy cranes—including a 45-ton crane holding a helicopter over the side of the building.

The most difficult shot was when the helicopter first takes off and catches its skid in an electrical cable, which causes it to crash into the side of the building and hang over the edge. For this, because we had people inside the helicopter (Lois Lane and the pilot), we bought the remnants of a crashed helicopter and rebuilt it and hung it on a crane with the blades turning and, first of all, crashed it through a building, and then over the edge of a building. It had to hang there while Lois fell out of the helicopter and was gradually sliding down towards the end and finally fell off—followed by the helicopter—and Superman flies up and saves the both of them.

The helicopter weighed a ton-and-a-half—plus we had to have people inside it and sometimes two camera crews hanging off the side of it, so that the whole of it was getting up to about two tons in weight. It had to spin and rock and break through buildings and explode on the edge of a building—which is all fairly tricky stuff, especially since you've got people inside and underneath it all the time.

We also built a hydraulic rig so that we could control the helicopter once it was over the edge of the building, in order to get the maximum effect of shifting and sliding over the edge—and then we had to combine that with the miniature of the helicopter falling off. The whole sequence came off beautifully, after working on it in two countries and two separate sets—a miniature and a full-size set. In fact, we had built two tops of buildings, as well. The whole thing was then ultimately edited into one sequence and I would defy anyone to tell the difference between the real helicopter, the mockup helicopter and the model helicopter. It all worked very, very well.

There were no effects done on the helicopter in New York, because they were working on top of an actual building (the Citibank Building), which meant that the helicopter could only fly in, land and take off again. So there weren't any special effects on the helicopter as such. The North American locations (which were Canada and New York) were handled by another special effects man, John Richardson, because at the time we were in England preparing for the major special effects sequences which would have to be shot when they got back from

Makeup Supervisor Stuart Freeborn (the one with arms) puts the finishing touches to a dummy head of Superman in preparation for one wild mechanical effect or another. The film was often so violently physical that it did not seem wise to risk the life and limbs of the real (?) Superman. Dummies were used infrequently and only in shots where they could not possible be detected as such.

America. There was a trial of strength for Superman going through fire, ice, snow, bullets and so on, which we were preparing for, so it was thought not really worthwhile to have a big crew in America not doing very much, and the crew that was sent out from England was supplemented by an American crew anyway.

All of the hydraulics and falling off the roof were done at Pinewood. We also had a sequence at the end of the film which involves a car getting crushed, so we built a car crusher on one of the stages and got an American car and literally crushed it. That was a beautiful rig to build, because we were into the realms of heavy engineering and big hydraulic rigs. We were getting something like 40 tons of pressure behind the rigs, so you knew that nothing was going to stop you from crushing that car like it wasn't even there.

That was a difficult sequence to do in some respects because, again, you were dealing with principal actors who were in the car and you obviously didn't want to crush them at the same time you crushed the car. All the time you were working within a safety perimeter, with the aim of getting the best possible effect in the safest possible way.

We also rigged various rockers for boats and cockpits, which were mostly hydraulically controlled. It's all a fascinating subject for me because hydraulics is really a liquid which, when used with the right equipment, is such a powerful force that there is practically nothing you can't move with it. It just fascinates me that simply by pressing a little lever or button, you can lift 50 tons. It creates a power complex—like using explosives.

As I said before, the sequence when Superman breaks through into Luthor's lair involved some effects, mostly with water. We had Luthor on various machines, one of which was a sledge (motorized) that had to go into the water. We built a rig and put it into the water to pull the sledge.

Then there was the Ice Palace, the buildings for which were done mostly in miniature by Derek Meddings. However, we put in all the effects on the stage—the smoke, the low-lying mist, and so on. There was a lot of flying in that sequence, as well, most of which will appear in SUPERMAN PART II.

The sequence of Boulder Dam cracking was, again, a combination of Derek and me working together. Derek did the miniatures portion and we took over for all the stuff that involved the actors—including water spurting through big parts of the dam, pieces giving way, and Jimmy Olsen falling off the dam and hanging on. Derek did his bit first and

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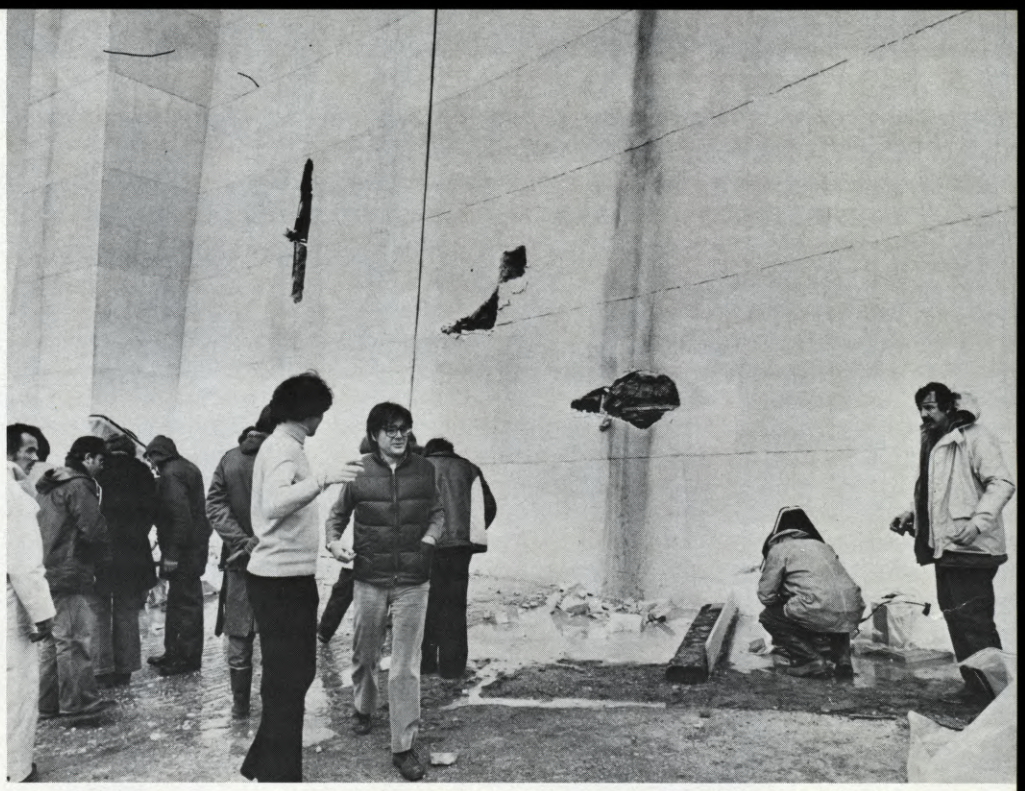
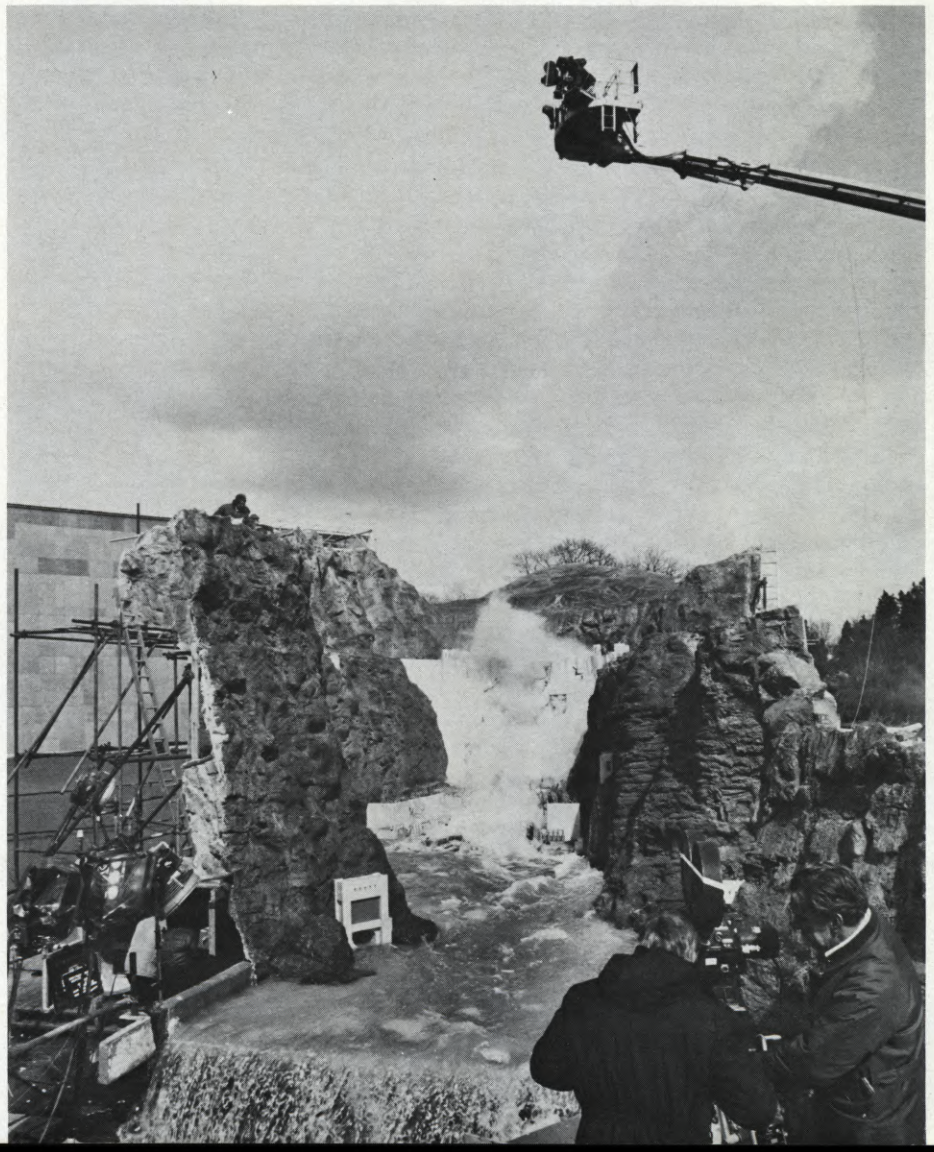


In front of a full-scale section of Boulder Dam, built on the backlot of Pinewood Studios, Production Co-ordinator Michael Suthie helps Director Donner shuttle back and forth between the main and second units. This section was used for close shots of the dam giving way and water spurting through the cracks.

The 40-foot-high "miniature" of the dam, as its facade bursts and a wall of water comes roaring over the top. Chilvers had to make sure that his full-scale mechanical effects tied in precisely with these miniature effects created by Derek Meddings. "Verisimilitude" was the key word.



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the picture. Another take would have been superfluous."

Gene Hackman, who won his Oscar as Popeye, the compulsive narc in THE FRENCH CONNECTION, is seen as Lex Luthor, the evil genius who pits his cunning against Superman's strength.

For Gene Hackman, who believes that variety is the spice of an acting career, SUPERMAN was a "romp."

"I don't know why they thought of me; I'm not sure *I* would have thought of me," remarks the chameleon-like Oscar winner. "But Lex Luthor was the best time I've had on a movie set in years. Someone once said that the villains have all the fun, and Luthor is the ultimate villain.

"He's a real estate wheeler-dealer with a predilection for waterfront property . . . like Australia! From his luxurious lair in the bowls of the earth beneath Metropolis, he concocts the most bizarre, yet weirdly logical super-crime in history."

Casting the crucial role of Superman presented the film's creators with a subtle and deep challenge. First, as Ilya Salkind pointed out, the actor chosen would have to create two distinctively different characterizations:

"Disguised as Clark Kent, a reporter for the Metropolis Daily Planet, he is meek, mild-mannered and totally inept in moments of danger. His writing may some day win a Pulitzer. But alone with Lois Lane, whom he secretly loves, he is awkward and speechless.

An elegant Marlon Brando, playing Jor-El, the father of Superman, stands beside three super-villains (Terence Stamp, Jack O'Halloran and Sarah Douglas) as they are being judged for their crimes in the Council of Elders on the planet Krypton. It is shortly thereafter, when Jor-El senses the approaching destruction of his planet, that he sends his son, the future Superman, hurtling toward Earth in a starship.

Producer Pierre Spengler, Executive Producer Ilya Salkind and Producer Alexander Salkind kept the "SUPERMAN" budget a secret—even from the Director—but did not complain when it kept mounting.

"Which makes him just the opposite of Superman, who can fly, vault skyscrapers, out-muscle locomotives, start fires with a glare, freeze deserts with his breath, peer through any substance except lead and shrug off grenades, all of which he does in a never-ending battle against crime."

The dual personality, adds Salkind, is what has made Superman such a great legend. "Almost all of us see something of Clark Kent in ourselves and something of what we would like to be in Superman," he points out.

Capturing that conflicting persona on screen, adds director Richard Donner, meant threading a thin line between illusion and reality. "We knew we had to avoid the trap which so many movies, sired by comic strips, have fallen into—parody or outright 'camp.' That approach would have achieved what scores of villains, including the unspeakably evil Lex Luthor himself, have failed to do—destroy Superman.

"Of course, the movie is bigger than life," he continues, "but amidst the most incredible adventures, the characters have reality. Even more important, it is a reality to the characters themselves. SUPERMAN is a comedy, a love story, an adventure and its own thing.

"But it is *not* a send-up."

The credibility—it was agreed—would begin with the actor who took the Superman/Clark Kent role.

"The first temptation," admits Ilya Salkind, "was to go with the biggest star name we could find. We approached or were approached by just about every leading man in Hollywood and abroad.

"But if we had cast a well-known star, as he soared over the city of Metropolis, you would never have been able to forget his star personality. It would always have been the star up there—not Superman."

Instead, after months of speculation and rumor, the moviemakers tapped Christopher Reeve, who was brought to them by casting director, Lynn Stalmaster. Reeve's description as an "unknown" isn't quite true to the facts. At the age of twenty-four, Reeve had worked more than ten years as a professional actor, including a stint on Broadway and on tour opposite Katharine Hepburn in the play, "A Matter of Gravity". Typically, he was auditioning for a commercial when the summons came to fly to England (by plane) and test for SUPERMAN.

Also typically, the news that he had won the role came from a startling source. During the drive back to Heathrow Airport, the studio chauffeur casually told him, "In case you don't know it yet, you're in. You're Superman." How the driver knew was a mystery to Reeve, but Donner later explained, "There wasn't a person on the set that day who didn't know immediately he had the part."

Now began months of arduous preparation for the role, under actor-athlete David Prowse who played Darth Vader in STAR WARS.

"I thought I was in good shape," Reeve recalls. "But by the time we went before the cameras, I was ready to challenge Muhammad Ali." Included in the regimen were two hours daily lifting weights, 90

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QUESTION: Do they do that by rotoscoping?

FIELD: Yes, but it's very fast rotoscoping, because the degree of accuracy required is very slight.

QUESTION: Have you had to do much accurate rotoscoping?

FIELD: We have done quite a lot, especially where Superman has had to move behind foreground objects. We've had to rotoscope the foreground pieces, such as bridges and things like that. A high degree of accuracy is required in that technique and it's very time-consuming. I have always been a great believer in keeping things simple, because simplicity often works where something complex doesn't. That's why I've tried to make simple supplementary mattes with straight lines. It's not always possible, but often it is, and then one has a good chance of success.

QUESTION: Does any problem arise from the fact that Geoff Unsworth always uses a lot of diffusers and fog filters that prevent you from making a hard matte?

FIELD: Yes, we did face that problem, and as a result, we've done most of those mattes on original negative—which is probably not the best way from some points of view, but certainly is from the quality point of view. It's the only way when you've got a high fog level, but Geoff has been very good to us. He has a very good eye, and he's kept the level pretty well constant.

QUESTION: For the blue backing shots you have also been using television viewfinders as an aid to marrying up the background and foreground while shooting. It has served as a guide to the camera operator and, indeed, to the Lighting Cameraman. Would you care to talk a little bit about that?

FIELD: Yes. We decided early on that we would need a system that would enable us to see visually the background plates when we were working with Superman in the foreground, so we used two systems. One was a straightforward video system; the other was the more deluxe Chroma-Key system. The reason for this was to help the cameraman light Superman to match the plate. Considering that the plates were very often photographed aerially over New York and between buildings, the light was obviously changing all the time. With the Chroma-Key system (in colour, of course), those changes become very obvious to the cameraman and he can match his light to make it look more real. Also it helps the operator with the moves he has to make in order to maintain Superman's flight path in various directions. That's very often difficult to do when Superman is very far away and you only have a small image of him. I only wish there were a way of throwing up a larger picture so that the operator could see a bigger image of Superman. Nevertheless, the system was very useful. But we didn't use it photographically in any way at all. It was purely a reference device for the crews, for the operator and for the cameraman—and in that respect, it has worked extremely well.

Superboy's future adoptive parents (Phyllis Thaxter and Glenn Ford) stare goggle-eyed as the super-strong tyke lifts farm vehicle to replace wheel knocked off during his landing. (BELOW) Years later, the grownup Superman is still lifting vehicles. Old habits die hard. Since Superman wears a blue shirt and tights, he is not an ideal subject for blue-screen process photography. Roy Field had to test many fabrics and colors in order to find one that would separate satisfactorily.

QUESTION: You were using a graticule system to mark out the picture area and, in fact, we made a special groundglass for you—isn't that so?

FIELD: That's right. You made special groundglasses for us to put in all the

various cameras—because, at times, we have had seven or eight crews shooting for us, sometimes even abroad. If you have a diagram or graticule in front of you, it becomes very simple to talk about reference points within the frame, particularly if it is a plate that we have already shot. The graticule is divided into 50 boxes, lettered from A through E down the left side and 1 through 10 across the top. We all work with the same graticule, which means that I can say to somebody in Hollywood or New York, "Superman should start in box 5C and travel on the optical print to box 7D." The man at the other end will know exactly the positions I am talking about. It's the only way to explain to people a long way off the complicated moves we have to make, particularly on optical printers. Even in London it's useful to phone them up and tell them.

QUESTION: But to actually put a groundglass in the camera with a grid on it—isn't this virtually the first time that such a thing has been done?

FIELD: Actually, I think Wally Veevers has probably done it before on some of his productions, and maybe Brian Johnson. We gave every crew one of the groundglasses, so that we would refer from one to the other without problems, and the system proved to be very, very useful.

QUESTION: On SUPERMAN you have used all three types of process systems: blue backing, back projection and front projection. Do you have to consider before shooting what process you are going to use, or are they all interchangeable?

FIELD: Normally we decide before we shoot what system we are going for. Occasionally, when one system becomes over-stretched and the shot becomes too difficult for it, we will switch to another system, but that has happened only on rare occasions. All of our plates are shot anamorphic (2.35). Therefore, we can switch it from whichever process we like without any problems. We've made a few Vistavision shots for the picture, which have worked out extremely well, because on one or two occasions we've had to make a greater enlargement than normal, and the only system I could think of that would hold the focus and definition was Vistavision. So we projected a Vistavision picture into models and rephotographed them—usually pulling away or panning or tracking or something like that.

QUESTION: Do you have a Vistavision projector?

FIELD: No, we hired Charles Staffel's Vistavision projector from the Rank Organisation. We don't have our own, unfortunately.

QUESTION: Have you used multiple printing at all, in order to beat the grain problem?

FIELD: Yes, we have on occasions. Indeed, we have used the same frame two or three times, and even at different printer levels. You know, 75%/25%—that sort of thing. Very often we've had to do that. One of the worst problems we've had to face was holding a frame occasionally and having to get rid of the grain in that frame—but, again, we've slipped frames, printed half of one frame and half of another at varying amounts—and we seem to have got by.

QUESTION: Can we talk about some of the sequences that have given you the most problems?

FIELD: All of the major sequences have given me problems. Dick Donner is a very demanding man, because he wants the very best possible quality. As a result, we've started out in a lot of areas supposing that we would have no opticals and suddenly found ourselves with quite a bit to do in order to make a sequence work. That's what generally makes one lose the most sleep, because you haven't planned for it particularly and you've got to find a very quick answer. The flying itself was a combination of many tricks and the essence of its working is the fact that we have used so many different processes. That and always being prepared with another back-up system in case one process looks as if it's going to fail.

QUESTION: On the projection systems that you use, is the print that you make for front projection also usable for back projection?

FIELD: No, we would need a different grading entirely for a back-projected plate—and a different light level, as well. They might be interchangeable on a few subjects, but on most we would have to make a new plate.

QUESTION: Have you used front projection blue backing at all?

FIELD: No we have not. We did some tests on this in the early days which were not very successful, mainly because one tends to get a slight foreground area shadow from a front projection system. It's controllable, but when you start getting into a matte area it becomes uncontrollable. We tended to get fringes around things—so we've steered away from this technique and, in fact, haven't used it. We would like to do more tests in that direction to see whether there is a way to eliminate the problem, because it would be a very good system if we could only get it working.

QUESTION: To what extent have you used the technique of putting a card across a matte box and then taking

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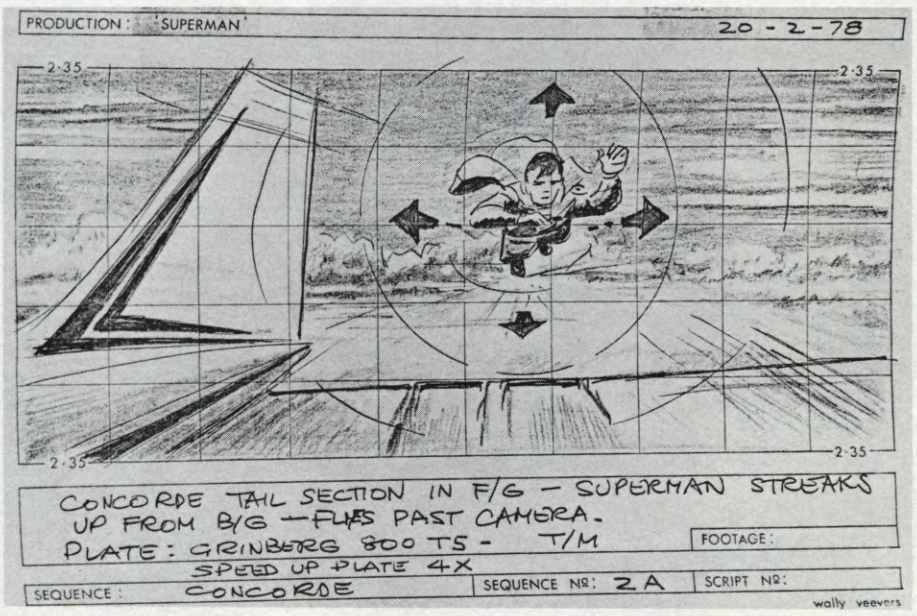
Storyboard with 50-square graticule (grid) superimposed. Samuelson Film Service Ltd. created special groundglasses for all of the Panavision cameras with this identical grid etched into them. This made possible positive reference between the camera, opticals and blue-screen people. With seven or eight camera crews sometimes shooting simultaneously, the system kept technical misinterpretations to a minimum.



infant Superman, it was felt that there was no way of matching what either the baby or even Mr. Brando might do, so we had a three-camera set-up on one Moviola dolly. We arranged it so that we could fit two PSR cameras on the jib and one on the side—all of which had individual light boxes. This made it possible for us to do a fairly involved tracking shot around Marlon and the baby while the dialogue was being spoken and Krypton was breaking up, so that in one take we could get everything we needed and it would cut perfectly. There would have been no other way of matching what would happen during that shot—no way at all—because with babies (and even with some adult actors) it's very difficult to match.

The three cameras were tracked by Frankie Batt, who was our Grip, under terrific strain. In the final cut of the sequence, a piece of each camera shot was used, and they were all obviously tracking at the same speed and photographing the same things. All three shots worked perfectly together.

Because of the short time that Marlon Brando was going to be with us, the sets in which he was to appear would always be pre-lit and pre-cameraed. That is, after the normal working day we would then go to the next set, where we would set up three cameras (or however many cameras would be needed) and Geoff would light a stand-in. As a result, when we finished in one set there would be no time loss. We could go to the next set and be ready to shoot—and there was an awful lot of Brando to shoot over a short period of time. It worked very successfully that way. We saved time and got results.

Geoff Unsworth was never especially keen on hand-held photography, although we did some films that needed hand-held work. Many people believe that hand-held photography is going to make things work more quickly, but it doesn't always. We've done films like THE MAGIC CHRISTIAN with Peter Sellers in which there was a tremendous amount of hand-held, because it was the type of film that could go hand-held and not disturb. Geoff and I were always very determined that the audience should not be disturbed by any photographic effect or use of the camera. I know that people often come out of rushes, after having seen an especially complicated shot that was done on the stage, and they are disappointed because they haven't seen camera moves, but we both felt that camera moves should go with the actor and should never be obtrusive—unless, of course, you were really trying to make a point.

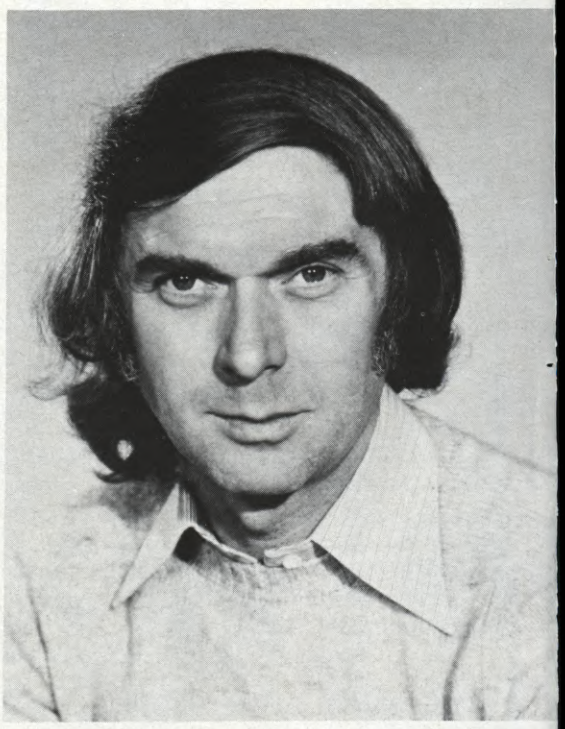
We did other films that called for considerable hand-held work, but SUPERMAN didn't call for it, nor did a BRIDGE TOO FAR. There is a shot in CABARET of which I am personally very proud. It is a high-speed hand-held shot that goes completely around the stage without your even knowing it was hand-held, because of the way that it was timed and done. So we used hand-held photography, but we didn't over-use it because it was the trendy thing to do.

It should be remembered that the Panaglide was just coming in when SUPERMAN started and, although we tested it and spoke to Donner about it, there were no situations in SUPERMAN that might have required it. We could always track, because we never had stairs that had to be climbed. We did some complicated tracking shots in the Daily Planet office on an Elemack dolly and they could not have been done better on anything else, not even a Panaglide. With a good grip and an Elemack and a smooth tracking floor you can do an awful lot, if you plan your shots properly.

Geoff was always concerned—as any Lighting Cameraman must be—with the camera set-up, but because of our long period of working together, I was allowed a very free hand to work with the director in finding and discussing the set-ups. Geoffrey kept not too far in the background and was always completely tuned in on what was going on. He would let the operator and the director discuss set-ups, but he was there for advice and obviously would speak up if he disagreed with something or felt something else would be better.

He believed that an operator and a director should work very closely. He wasn't a cameraman who believed that an operator should be there just to turn handles when told. He believed that an operator should take a very creative part in filming—for which I shall be eternally grateful to him. While you were getting the set-up, he would already, in his mind, be photographing the scene—so it was a very happy and, I thought, very successful working relationship we had together. The many directors I have talked to since his passing have all said the same thing—that they enjoyed the way we worked together. I certainly enjoyed it, and I just wish it could have carried on for many more years.

I realized the difference between the way an American cameraman and gaffer work together compared with the English system when we worked on location in New York. We had a superb gaffer, but he was obviously quite surprised when Geoffrey decided where every single light would go and exactly how it would set and look. I think this goes for every English cinematographer. They are more totally involved with the rigging and how the set is going to be laid out.



Peter MacDonald, who spent more than 20 years working with Geoffrey Unsworth as clapper-loader, focus-puller and Operator, found it a very enjoyable experience, which he wishes could have continued for many more years.

We had fantastic gaffers, such as Maurice Gillette who did many of Geoff's films and who, I am sure, could shade and pencil in exactly how a set should be lit, but not one light would be switched on until Geoffrey would come and say how it should be set. I think that is probably the basic difference between American cinematographers and European cinematographers.

Geoff Unsworth was, without a doubt, a consummate artist of the camera and, like many other Impressionists, he liked muted colours and a muted feel to a scene. He would be happier when the sun was in than when it was out, because he could have that lovely overall light, rather than the brilliant sunlight that leaves heavy shadows everywhere. That he loved a nice bright overcast day is evident in the scenes we shot for SUPERMAN in Canada, where we did the death of Superman's adopted father, played by Glenn Ford in the film. It was a beautiful scene in a cemetery and we had one of those marvelous days when there was very little sun, but just a lovely, high, bright sky. The results look magnificent, with the lovely muted colours that made Geoff very happy.

Having been in many capitals of the world with Geoff, I recall that our Sundays were usually spent going through museums and art galleries in Madrid, or Paris, or Venice or wherever we were working. We would go around and look at paintings, and certainly visit anything that was interesting in the town. We would never just sit in a hotel and read the papers; we would always want to visit the places of interest and, in so doing, see the pictures of the country.

Geoff had a great feeling towards art and in his home there are bookshelves full of books about painters and places. In every town we went to Geoff would buy a book about the place, even if it was only a village. I couldn't believe that he could find books about all the places that he did. We went to some place in Canada that wasn't even on the map and he found in a local shop that there was actually a history of that little village. He bought it immediately and spent the evening reading it. He had a terrific interest in everything around him, and I think that, in many ways, that is what kept him very young in his ideas.

Geoff would stand in front of a painting and look at the lighting and study what the painter had done, but I think that any cameraman worth his salt would do the same thing. He would probably do it without thinking. When we were in Madrid we spent many Sundays going around the Prado and whereas I might look at many pictures and take them in, Geoff was much more patient and would study them much more closely than I did. He would sit for maybe half-an-hour and enjoy one picture.

Geoff obviously had a great love for the cinema and went as much as possible. He admired many cameramen, but he had a special regard for Haskell Wexler. He had seen a lot of his recent work and felt that he really had hit a mood and style of photography that Geoff greatly admired.

In England I could probably name ten cinematographers whose work he was very fond of, but I will simply say that his regard for David Watkin was very high. He felt that David had tremendous courage in the way he photographed subjects and that he was very original. I know that when the two first met (I introduced them), they talked to each other as if they were long-lost brothers. They obviously both had admiration for each other and yet had never met, because they came from totally different schools of photography. David had never been a cameraman during the big studio time, while Geoffrey had, but Geoff loved some of David's work, especially the interiors for CHARGE OF THE LIGHT BRIGADE, which he thought was one of the best photographed films he had ever seen. (And I must say I agreed with him.)

Geoff was especially proud of John Alcott, who had been his Assistant for many years and later won an Academy Award for photographing BARRY LYNDON.

Geoff was regarded by almost everyone who knew him as one of the all-time great cinematographers, but he never felt that way about himself. He was a very modest man. If anything, he was an overly-modest man. As far as his photography was concerned—and I'm sure this goes for most cameramen—he was terrified (and these are Geoff's words, not mine) every time he went onto a new set. But once he had made up his mind how it was going to look, he was happy.

He himself said to me many times that every new set could become a nightmare. He knew how he wanted it to look, but he wasn't always sure how that could be achieved. Geoff couldn't pre-plan and pre-light the way that many cameramen can. It had to come to him at the time. But once he got the feeling of how it was going to look, then nothing could stop him, and very soon he would get the result he wanted.

Geoff loved photographing period pictures and I think he must have been very happy with the period of TESS, the picture he was working on when he died. He loved pictures like BECKETT, into which he could put a mountain of mood. I think Geoff loved almost everything that he went into, but if you gave him a period film, if you gave him some candles, he was very happy—because then the cameraman could really use his art to the fullest.

He also took great pleasure in making any women who came in front of his camera look as beautiful as possible. However, this sometimes led to complications, because there were times during the course of a film when the director would not want the artist to look quite beautiful. I can remember a time on CABARET when the character played by Liza Minnelli was supposed to have had one hell of a night drinking and doing a few other things that I can't go into in a

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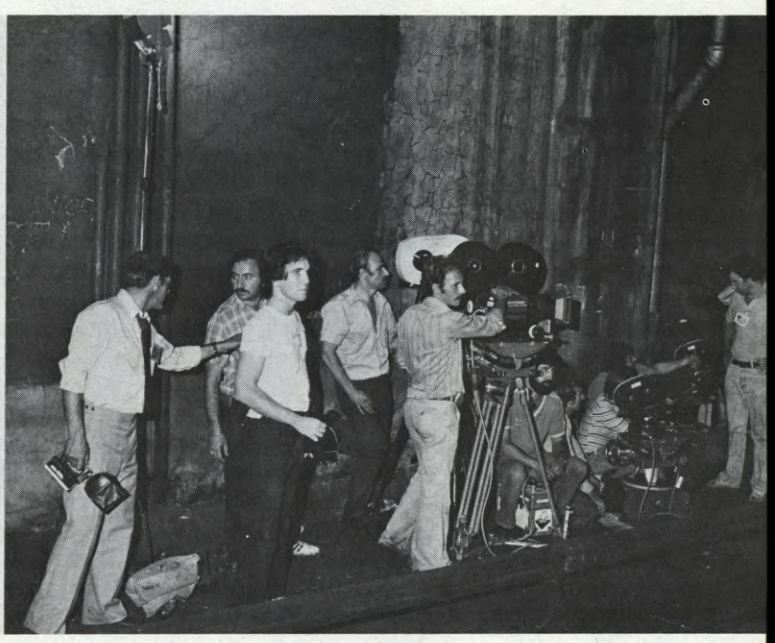
(LEFT) MacDonald (back to camera) lines up for a tracking shot down a New York street. (RIGHT) New York Second Unit Cinematographer Sol Negrin, ASC, (wearing checked shirt) sets up with four cameras to shoot a train run-by on location underneath Grand Central Station, where temperatures often exceeded 110°F. While six or seven units were sometimes shooting simultaneously, they all followed the photographic style set by Unsworth.



DIRECTING THE FILMING OF "SUPERMAN"
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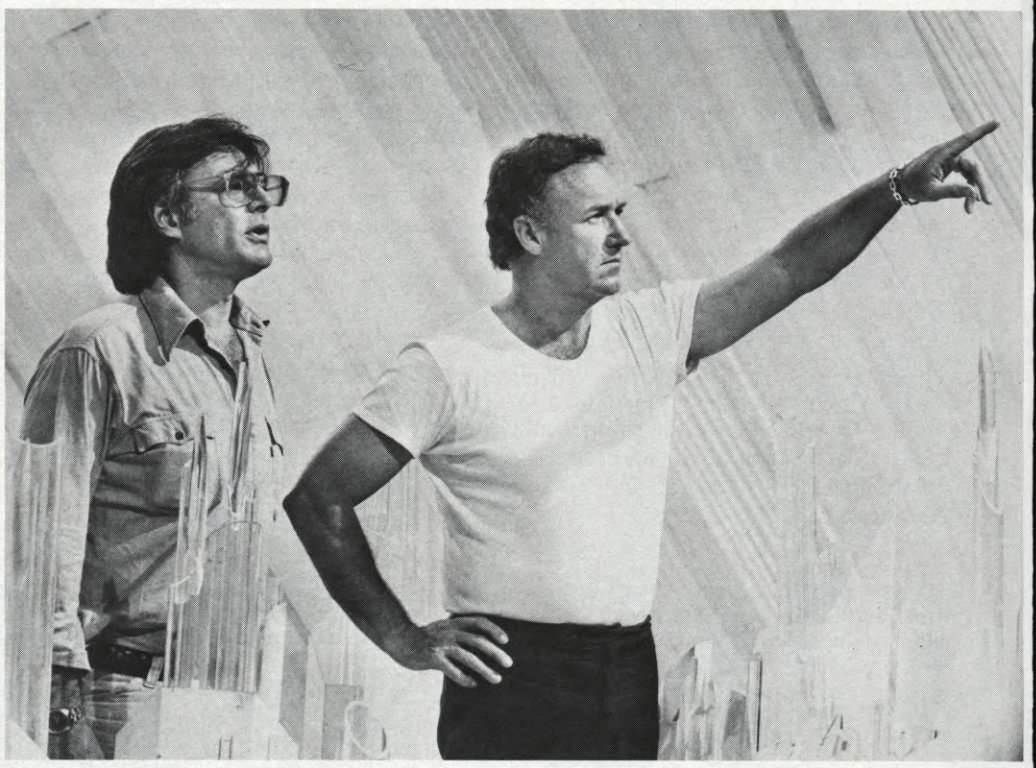
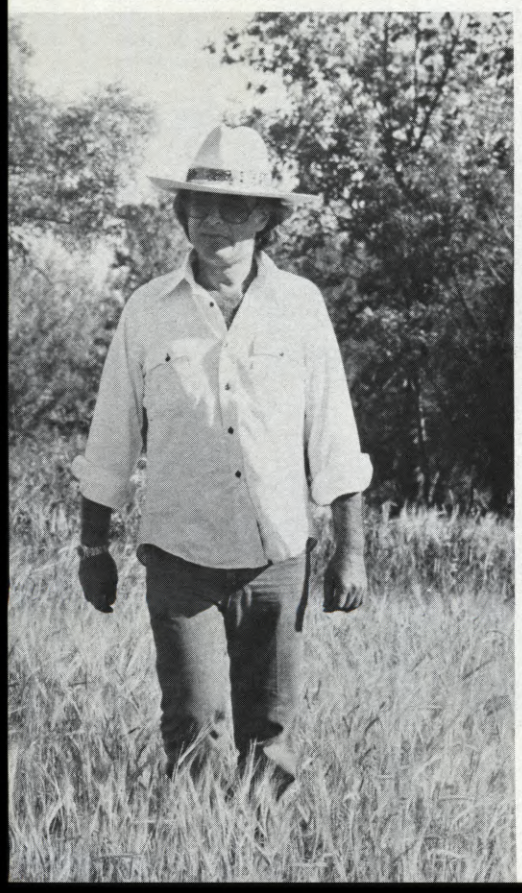
have and the techniques they have used before.

In the beginning on SUPERMAN, as on all pictures, the responsibilities were all sharply departmentalized. We had Roy Field in charge of opticals, Colin Chilvers in charge of special effects, Les Bowie in charge of matte painting, Derek Meddings in charge of miniatures, Denys Coop in charge of front projection and, of course, the genius of Geoff Unsworth, who provoked everybody beyond the limits of their own knowledge. But in the beginning I would hear things like, "It's not my department." The fact is that I had a major problem on this picture, because I was as naive as anyone else—even more so. I read a script and rewrote it, but the project was approached like Indians attacking a fort. The script would indicate that Superman flies here, he flies there, he does this, he does that—without anyone ever really figuring out how he was going to do all that. I mean, if I were the producer of this film, my first venture, before getting involved with anyone or anything, would have been to invest $100,000 or whatever into proving that I could make a man fly. If I were sure I could do that, then I would go out and make a picture. Nobody did that on this picture. They simply turned a script over to us (which we would change) and there were all these incredible effects to be created.

The "SUPERMAN" film is acrawl with far-out characters, such as (LEFT) the arch-fiend, Lex Luthor, played by Gene Hackman, and (RIGHT) his moll, an almost-too-much-of-a-good-thing cupcake, played by Valerie Perrine. Donner resisted the temptation to play the whole thing as high-camp, striving for "Verisimilitude" instead. (BELOW) He rehearses Hackman in a scene.



A walk on the wild side. Donner gets back to nature with a stroll through the forest on location in Canada, in order to recharge his creative batteries.



QUESTION: Do I understand, then, that the most crucial aspect of the production was whether or not you could get Superman to fly believably?

DONNER: Absolutely. A film like SUPERMAN can work only if the audience accepts the fact that a man is flying. They will react with gasps, sighs and screaming—but in an odd sort of way, our feats in this film (hopefully) will be totally taken for granted by the audience. They will applaud them and they will be excited by the things the character does as Superman, but they won't be impressed by "special effects", as they have been in other recent films that have been made.

QUESTION: Why is it particularly difficult to make a man look like he is flying? Is it the take-off?

DONNER: It's the take-off, the landing, the attitudes in flight. To put Superman up in the air at a one-dimensional angle and keep him like that would have been an easy answer to the problem—but not an adequate answer for me, because it wasn't the ultimate. It was what I had seen before, or what had been done be-

fore, in certain motion pictutes, but I wanted a more convincing illusion of reality.

STAR WARS and CLOSE ENCOUNTERS enjoyed a tremendous advantage over our SUPERMAN project. (I choose these two pictures as examples because they are the most contemporary and most talked about special effects films that have been done.) They had the advantage of dealing with inanimate objects–space machines–that they could fly from place to place. When these spaceships came into the picture, they came in with a great deal of noise and light and, being inanimate, they could be computerized for multiple exposures on the film. In other words, their movements could be repeated precisely in order to add piece after piece of foreground and background detail. Since they were all inanimate objects, this was relatively easy to do–although still tremendously complicated.

In SUPERMAN we were dealing with a man who is flying. You could never repeat his movements precisely–even with the best computer in the world–because he was a human being. If a finger moved in the wrong direction or his cape fluttered slightly differently, you could never reproduce that exactly. So we faced an incredible problem, because we couldn't computerize the operation. We could computerize movements of the background or camera, but we could never repeat the human movements precisely. Secondly, as I mentioned before, the spaceships came onto the screen with a great deal of noise and light. Sitting in the theater, you were shaken right out of your seat. It was magnificent! But Superman does not make any noise or emit any light when he flies. This meant that there was a danger that his flying could seem uninteresting–especially if we simply had him going left-to-right, right-to-left, up or down. As we have actually filmed him, however, he twirls, he loops, he spirals–he flies! A great deal of the credit for this goes to Christopher Reeve, the actor who plays Superman. People ask me, "Where did you find him?" And I say, "I didn't find him. God gave him to me!" He is probably not only the finest young actor I've worked with during my entire career, but he looks more like Superman than Superman does, and more like Clark Kent than Clark Kent does. He enjoys playing the role of Superman, as well as the buffoon who is Clark Kent, the bumbling, stumbling character who must isolate himself from the others by being a silly man.

On top of that, Chris is such a dedicated young actor. Being a pilot in private life, when Chris starts to feel the act of flying, he flies like nobody else could ever fly. When he is up there, that kid is flying! I mean, he can feel the thermals, he can feel the movement, he can feel the exhilaration. He's phenomenal. His hand movements, his attitudes of anger flying around in hot pursuit, how he shifts his body movements–it's just brilliant! His performance enhances everything else we've done.

QUESTION: From the technical standpoint, would you say, then, that your major challenge was to keep him from looking like nothing more than a cardboard cut-out soaring against a background?

DONNER: Yes. Our main problem was to keep him fluid, mobile and looking like you could see 360° around him at all times–and, miraculously, it does come off. When you really think about the fact that we were using wires, front projection and pole arms, how do you really show in one shot all those angles of flight? That is what we have accomplished.

QUESTION: Can you tell me a bit about working with Denys Coop, who photographed the flying sequences?

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MECHANICAL SPECIAL EFFECTS FOR "SUPERMAN"

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then we picked up all the closeups.

There was a lot of water splashing about in that dam sequence and the spinning disc rain deflectors which Samuelsons developed for RYAN'S DAUGHTER worked very well in keeping the lens from getting wet. (The cameramen still get wet, but the lens doesn't.)

We used explosives on the dam to blow some holes through it and backed it up with water tanks. In fact, we used the 007 Stage at Pinewood as our sort of reservoir for backing up the water that was spurting out of the dam—quite possibly one of the most expensive reservoirs ever. The miniatures were on the other tank stage at Pinewood.

Actually, the dam itself was originally designed to be full-size, but we ended up revamping it into a miniature. Through the use of high towers we were able to get shots of Jimmy Olsen looking over the top of the dam and hanging from it—although he wasn't in any way connected to it. But through the lens of the camera the whole thing is tied into perspective and it looks like one shot.

The thing is that there are ways of making a set appear to be much bigger than you could ever build it. The miniature dam was 40 feet high, but it represented something that was 130 feet high. We were able to control the water coming out of a model 40 feet high, but obviously if you have a hole in a 130-foot dam it would have to be that much bigger and you would have to build buttresses and have more equipment, etc. It wasn't worth going through all that for the sake of this particular shot. The shot looks good because we tied everything together, and even though the dam was a miniature, it looks full-size on the screen.

We had other miniatures of avalanches and used (for the first time in many years in England) a lot of foreground miniatures. This has become a lost art by and large, but in some cases, where you can use the actors in the shot with miniatures in the foreground, it works so much better than having to make a process shot, which takes a long time to get back in order to find out where you are.

For example, we had Superman pushing a huge rock off the side of a mountain, and obviously we couldn't build that, so the side of the mountain and the huge rock were built in miniature, with a platform beyond the miniature that Superman could stand on. Through the camera the whole thing appears to be tied together, so that when he is pushing the rock, it is really the *miniature* rock that he appears to be pushing. The miniature rock was about eight feet high and weighed half-a-ton and was pushed by hydraulics. We had to time our push with Chris's push so that we both pushed together, as it were, and the rock tumbled down the mountainside. Through the lens, perspectivewise, the whole thing ties in together, so that it looks like he's standing on the side of the mountain. We used that technique on more than one occasion, with great success.

The rocket sequence, again, was one of those combinations of the cameraman and us. Obviously we couldn't use real flames around Chris Reeve, even though he was playing Superman—who is impervious to fire. We had to work back from the fact that Superman ultimately catches up to the rocket in flight and goes up the back end of it and diverts it off into space. So we had to accept the idea that Chris had to appear to be working in amongst the flames.

This was one of those times when we were working isolated from any other department, and we might still be scratching our heads and wondering what to do, but with the cooperation of Denys Coop and Roy Field, we came up with a technique that worked. By using extra powerful lights and steam or dry ice and by turning at slow speeds, we were able to get the feeling of force and fire from the rocket. Furthermore, Chris could work within that as much as he liked without it causing him any injury.

From there we could then develop back down the line to our 20-foot miniature rocket and right down to our 4-foot rocket, with each miniature rocket playing its part in turn, tying in with the technique which we used full-scale. Although it might have seemed the easiest method to start with a real rocket propulsion method on the miniature rocket, we never would have been able to reproduce the effect full-scale for the shots where Chris was involved.

We did, of course, have to build the rig that the rocket travelled on when Chris caught up to it, which was a big hydraulic rig. We used a lot of dry ice machines and powerful fans and so on, and we had to build a 20-foot rocket that was on a pole arm sticking through a front projection screen. The amazing thing was that as much as we could make the rocket look real, it was only when it got before the cameras and was literally flying with the process unit that it really came alive. It's incredible to see something that you've been building in a workshop and fitting onto a process stage suddenly flying over the Nevada desert or the tops of mountains—and *really* look like it's flying. I suppose that no matter how long you work in the film industry, you can still sometimes be amazed at what comes over on the film. It's incredible!

The rocket sequence was one of those in a picture that you always dread will be coming along—and ultimately it *did* come along. But it's one of those things

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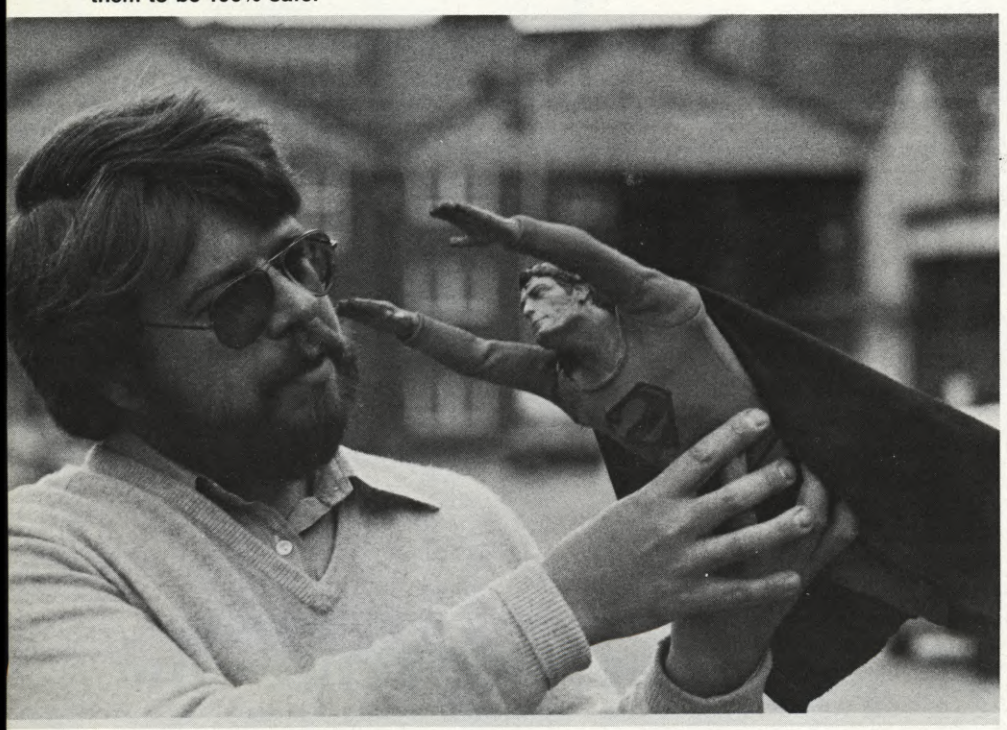
Colin Chilvers examines a radio-controlled model of Superman, which will be flown in one of the extreme long shots. Chilvers uses radio controls only when there is no other alternative (and never when any explosives are involved) because he does not consider them to be 100% safe.



The destruction of the planet Krypton begins with earthquake-like tremors which precede a violent and totally devastating eruption. In order to achieve such an effect with complete realism, Chilvers and his crew rigged hydraulics under the set to make it move as if there were an earthquake. Individual pieces of the set were rigged on hydraulics to make them sahake and drop from above. Pneumatic tip tanks under the floor of the set toppled huge chunks of polystyrene and polyurethane covered with front projection materials and illuminated by light boxes on the cameras to give them an "unearthly" glow. Huge crystals were pushed up through the floor from a 16-foot space below.

(LEFT) Superman snatches Lois Lane from a falling helicopter and flies her to safety on top of The Daily Planet Building, which was a full-scale section built on Pinewood's backlot. The full-size helicopter (weighing two tons with the people inside) was suspended over the side of the building by cranes weighing up to 48 tons. (RIGHT) Superman and Lois fly off through the front-projected night on a specially built hydraulic rig. (BELOW LEFT) All-around special effects wizard Les Bowie (shown here painting a glass matte) is credited with devising the radio-controlled device to make Superman's cape swirl in flight. (RIGHT) The exterior of the North Pole, constructed on the giant "007 Stage" at Pinewood. Here the young Clark Kent seeks the Fortress of Solitude.

shot for a long enough time to show the water coming out of the dam and actually filling the valley below.

Then, of course, we had miniature explosions in the power station below, so that at a given time we could set these off and blow out the sides of the power station. We had rocks fall at the same time, because it is an earthquake that causes the dam to burst. We had rocks coming off all the surrounding hillsides. It was a very successful shot and the matching was perfect.

When you do a picture with a director for whom you've worked before, he knows what you can do and he accepts the fact that you are going to give him what he wants. But when you start on a picture with a director who is new to you—as in the case of SUPERMAN—the director may not know what you can do (although he will surely have seen pictures that you've worked on) and you will often have to start proving to this director that you can do the job—*and that you can do it with miniatures.*

The fact is that there are a lot of directors who hate miniatures. As soon as you mention that you are going to do something with a miniature they don't like the idea. It's like the classic situation having to do with matte shots. A director will have seen a matte shot in a picture—a really *bad* matte shot—and then you come along and try to talk him into having a matte shot in his picture. Well, he doesn't want to know—because he remembers the worst one he's ever seen. The same thing applies to miniatures. If a director has seen a picture that was badly done—one in which the miniatures just looked like models—that is what he will have in his mind. It's not until you do something for him that he really thinks is great that he develops faith in you and lets you go ahead.

I think this was the case with Dick Donner, when I told him that we would do the bus crash on the San Francisco bridge using miniature cars, with the bus crashing through the parapet and the bridge collapsing. After all, we needed to show cars going in both directions, and they had to have their headlights on (because people drive on the Golden Gate Bridge in dull weather with their headlights on) and the ones that passed the camera had to have their brakelights on. The fact is that when Dick saw the rushes for that sequence he was sold on miniatures.

The only time that you can be pleased with what you've done is when you see the rushes the next day—*and people don't realize that what they are looking at is a miniature shot.* You may have complete confidence in yourself, but you still feel that you have to sell other people on the idea—and that's very difficult sometimes. I have rolls and rolls of film that I can show people and say, "Look, this is what we did on that picture." They'll say, "Oh yeah, great!" But for some unknown reason they'll think that you won't do as well on their picture as you did on the last one. What you are going to try to do, of course, is make it even *better* than you did the last one. The fact is that every time we do a certain type of shot we always seem to improve on it.

I'm hypercritical in regard to even very minor things in our work. Perhaps we'll view a shot in rushes and everybody will be happy with it, but I'll look at it and say to myself, "I wish I had left a set of tyre tracks behind the car when it skids—and perhaps a little more smoke to give the impression that the tyres were burning from the skid." So when you do it next time you try to add these things—which usually means giving yourself more problems. But somehow you cannot avoid doing this. I think it has something to do with the fact that you just want to make every shot a little gem.

If anyone comes up with an idea that will add something to the shot—and it can be put into the operation without holding things up—I am only too willing to

A miniature helicopter topples from the roof of a skyscraper. The shot had been preceded by scenes of a real helicopter landing on the rooftop helipad of the Citibank Building in New York. Then, using a full-scale helicopter mock-up hung over the edge by giant cranes, Superman flies up to rescue Lois Lane. The helicopter then topples over the edge in miniature, as illustrated here. The match of all three shots is perfect.

use it. You may be so intent on making a particular shot that the most obvious detail will escape you, but somebody who is standing by just watching—perhaps a painter who has finished his bit—will remark, "Don't you think that the car, as it brakes and skids, should slide sideways?" That may be just the touch the shot needs to make it more realistic.

I have a great crew—people who have been with me for a very long time—and I think it would be hopeless to go into a picture like SUPERMAN without having this sort of crew behind me. There are lots of crazy ideas one thinks of and you need somebody who is behind you, backing you up. When you are struggling to get a shot you may realize that the rig that you've built needs something a little more sophisticated, and it's only when you've got it set up in front of the camera that you can see what you need to make the shot work. Well, I have a crew of technicians who are just prepared to go away and make what is required, so that on the following day, when you come in, there it is ready for you.

It's not just one person who gets the result; you need the backing of a crowd of good people. Dick Donner needs a crew behind him and I need a crew behind me. I have a good engineer and a good model shop to put in all the necessary details. Sometimes, when I am telling them what I want to do with something, they may feel that I may be wasting time—like putting suspension into the wheels of miniature cars. But if you don't have that suspension, and the tyres don't have a sort of spring to them when they go over a bump, the audience will sense that something is wrong, because they are used to seeing cars on roads bumping over things. They may not be able to pick out the fact that you are using miniatures, but they will know that something isn't completely realistic.

Some miniatures are used in cases where there can be no "Take Two", because you will have blown it up or burnt it or dropped it and destroyed it in some way. These once-and-for-all situations are worrying because you may have spent months building a particular model and shooting from every possible angle that is required in the script, and now you've come to the point of the big climax, when you've got to either blow it up or set fire to it. You worry about the fact that, once done, it's going to take months to rebuild the thing if all does not go well. So, of course, you cover yourself by shooting lots of different angles on it. Over the years I have been involved in so many pictures and television series that have always ended up with the whole of a base or missile site blowing up or whatever. As a result, I've learned to create situations that will make it possible to avoid completely losing a shot, simply by thinking of another way of cutting it if all does not go right.

For example, when we did the sequence of the supertanker blowing up in THE SPY WHO LOVED ME, the biggest worry was that after we had sunk the tanker there would be no way of getting it out of the sea. The deck of the tanker was beautifully made—it had an enormous amount of detail in it—but after spending two days blowing the deck to pieces with explosions and fires, I found that by adopting a different camera angle, we could just replace some of the broken pieces or put them back together again, so that when shooting from another angle, you would never know that the deck was such a mess. By bringing the camera down low, right to sea level, you could shoot a fantastic explosion taking place above you, with nothing showing to give away the fact that we had just wrecked the deck, burnt it out and completely destroyed it.

People have often asked me if, after having spent months, lots of money and gallons of midnight oil, it doesn't break my heart to have to destroy a beautifully made miniature. I can only say that, after spending maybe weeks shooting it from every conceivable angle, you get to the point where you hate it and are looking forward to blowing the thing to pieces or sinking it or whatever is going to happen to it. You look forward to knowing that it's out of your hair.

The fact remains, however, that once it's gone there's nothing you can do about it, so you have to be absolutely sure it won't be needed again before you destroy it. The first thing I do—as, of course, everybody does—is get in touch with the director and the editor and say, "You'd better look at everything we've shot and decide that it's right, because we are now about to destroy it completely and it will do you no good to ring me up two days from now and tell me that you could do with an extra shot. By then it will be too late, because the tanker will be on the sea bed and there will be no retrieving it." Of course, you always feel that there *could* be ways of retrieving it, and you try to work them out, but it's always the cost that would stop you—so you have to be sure.

Books on special effects almost always include formulas for working out camera speed in relation to the scale of the model in shooting miniatures, but I don't think I've ever gone by any of these formulas. I'm sure that they've been worked out by people who have had these heartaches before, but I've always found that I can do it better by eye, rather than working it out mathematically. I'm no good at math anyway. So, without making myself look an idiot in front of the whole crew, I have learned, over the years, to see something happen and know the speed at which a vehicle should be moving and I know that if I have to slow it down five times it will look a certain way. Sometimes people look at you as if you are an idiot because you are doing it by guesswork, but I very seldom fail.

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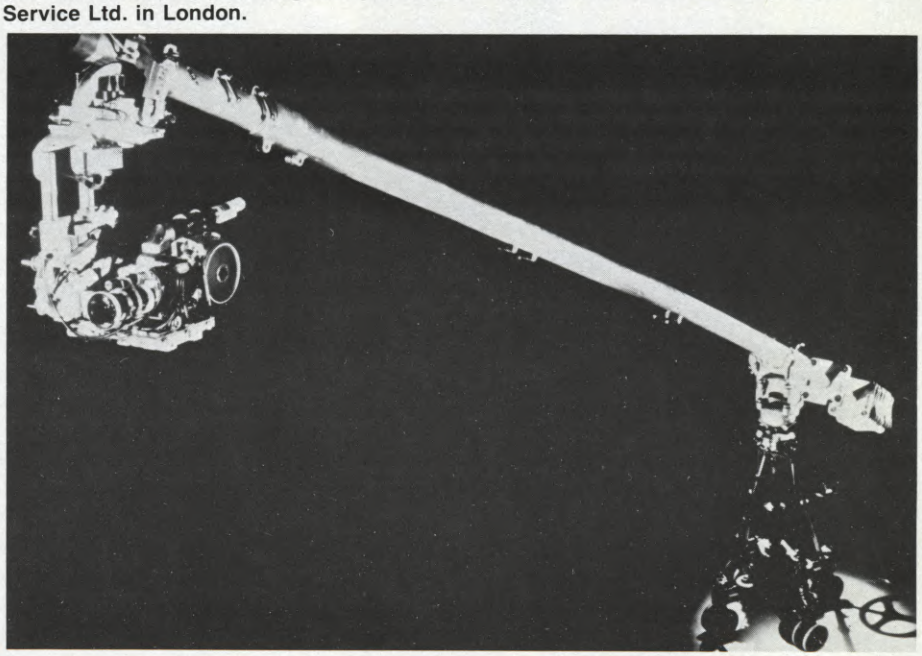
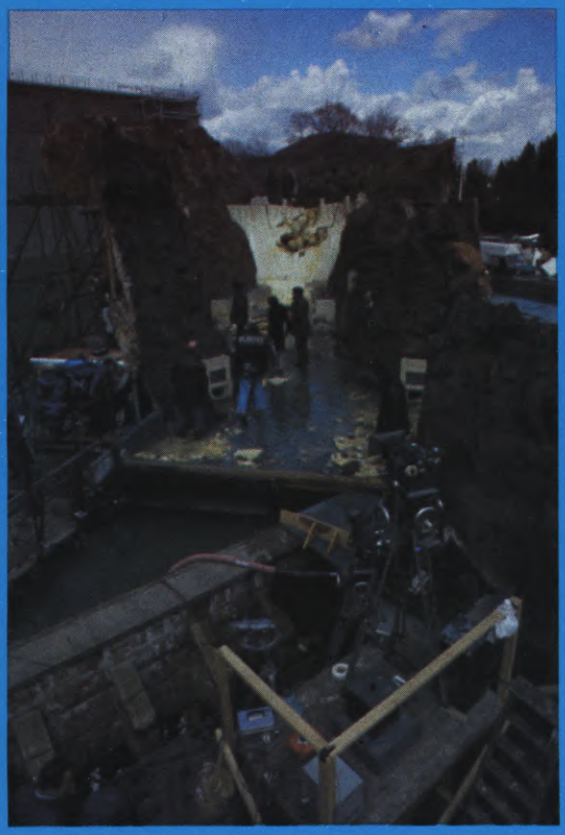
The LOUMA, which consists of a remote-controlled camera on the end of a slender boom arm, was used to afford tremendous mobility for the sequence in which the planet Krypton is destroyed in miniature. It dips in and out of gulleys, tracking along the sides as "huge" chunks of cliffside fall in front of the lens. The device is the creation of Jean-Marie Lavalou and Alain Masseron, working with Samuelson Alga Cinema in Paris and Samuelson Film Service Ltd. in London.





(LEFT) Putting finishing touches to the miniature of Boulder Dam, built against the paddock tank on the Pinewood Studios backlot. It had to exactly match the real dam, which had already been filmed in America. (RIGHT) Five cameras were used to record the break. Two of them were concealed in the mountainside on the left. Another was mounted on a cherrypicker for a high-angle "looking-down" shot. (BELOW LEFT) The dam bursts, followed by explosions in the power stations below. (RIGHT) A wall-like torrent of water gushes from the top of the dam. Six huge pumps forced the water to the top and poured it over an aluminum platform, in order to avoid the look of a bathtub being emptied.

I have found in shooting miniatures that one minute you are filming at 120 frames a second, whereas in the next cut (because you need extended depth of field) you are shooting at 16 frames. So you are jumping from 120 frames to 16 frames to 24 frames to 48 frames. Sometimes we go through all the camera speeds on one picture. You use whatever camera speed is necessary to get you what you want.

The Mitchell Mark II is our preferred camera for shooting miniature action because it goes to 128 frames a second, and there is a lot of difference between 100 frames and 128 frames. Strangely—because I suppose people could prove me wrong—I find that even 128 frames per second is not really fast enough for some of the things that we want to do, especially when we are doing miniature explosions.

After years of working on television series like THUNDERBIRDS and all of the James Bond pictures, I've found that I always have to make the explosions up myself. Now, everybody knows that if you wrap a soft explosion very tightly, you've got a very fast explosion, so you've got to create the desired effect by not wrapping it too tightly. Over the years I've tried all kinds of containers that I think will give me the explosion that I need, and I always end up wrapping it in a plastic bag and camera tape. I can tell just by squeezing it whether or not I've wrapped it enough. That comes from experience—but, of course, it depends on what you put on top of that and what material you use as to just what sort of explosion you'll get.

One of the problems in shooting miniatures is to get sufficient depth of field to make them look like the real thing. That is one reason why, when shooting what is supposed to be an exterior miniature, I actually try to shoot it outside. Another reason is that trying to create "God's light" on a stage certainly does not result in the same effect. If you can take the

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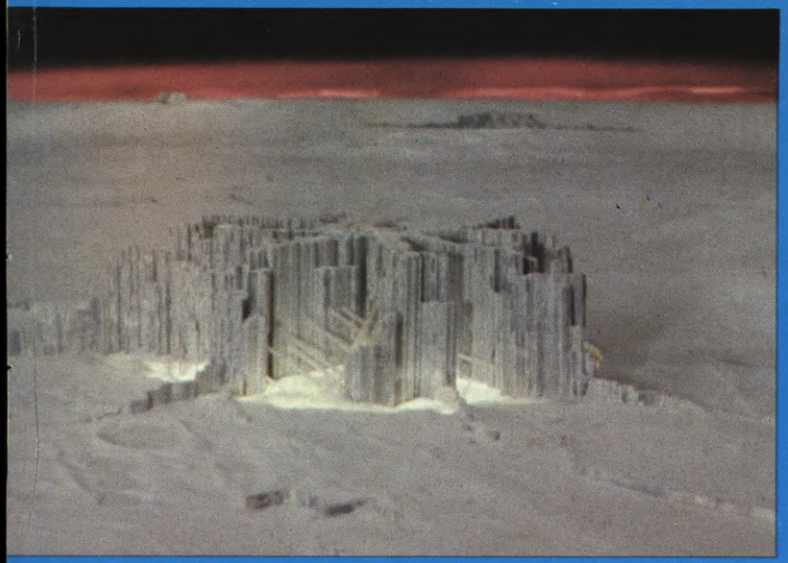
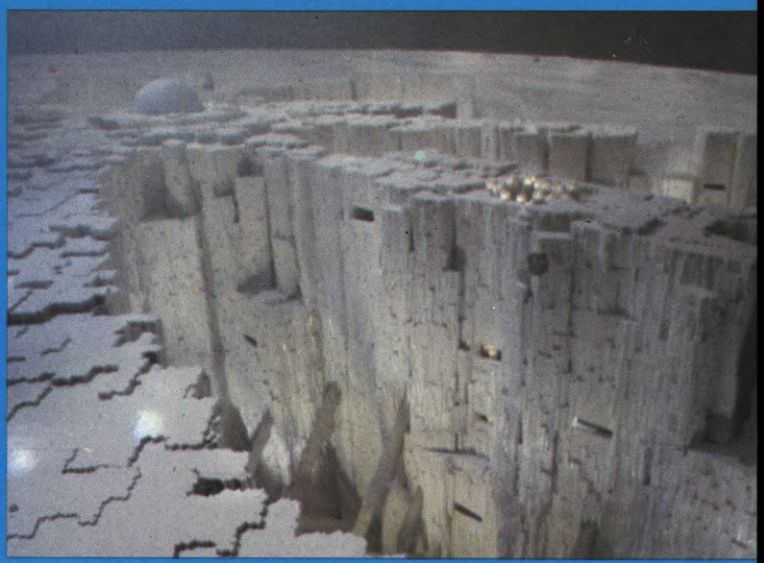
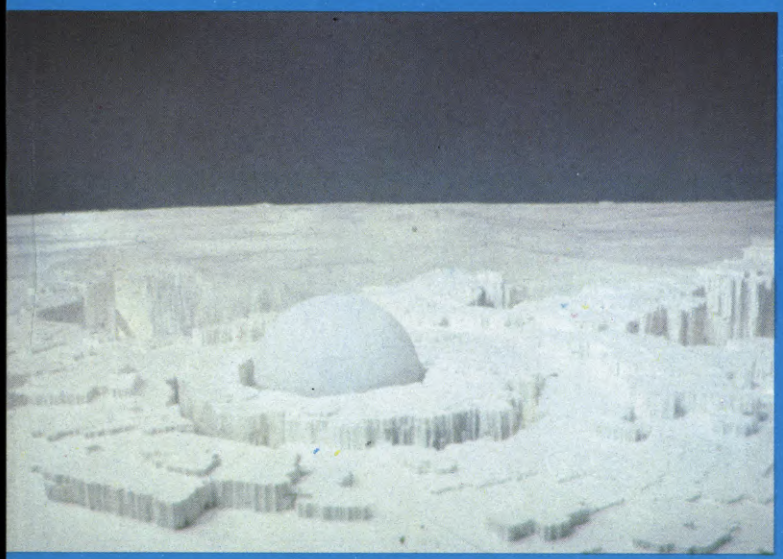
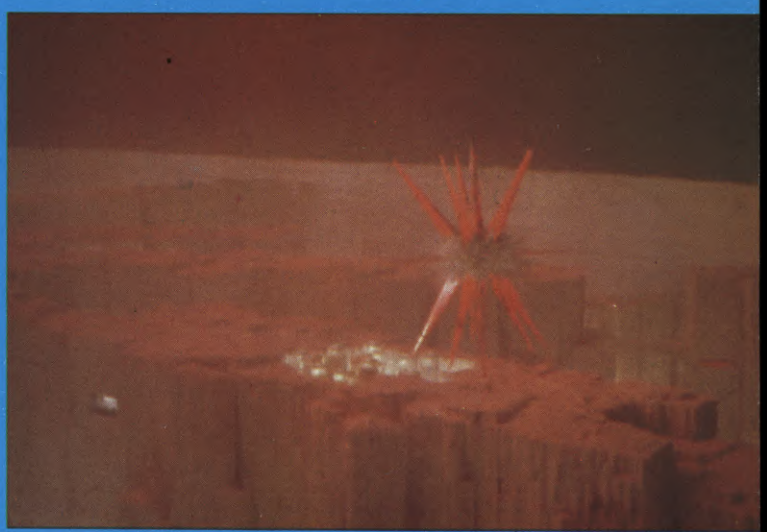




(LEFT) Miniature model of a city on the frigid surface of the planet Krypton. The red horizon has been laid in to match up with an optical shot to be added to the top of the frame later, showing the Red Sun approaching on its collision course with Krypton. (RIGHT) A closer shot of Krypton, showing a city aglow and the peculiar crystalline geology of Krypton's surface. This crystalline structure was inspired by photographs which Production Designer John Barry happened to see in a book on crystals.



(LEFT) The Trial Dome on Krypton, an exterior miniature to tie in with (RIGHT) the interior of the Trial Dome, as three accused villains are being tried. The faces on the walls were projected into a mirror and reflected onto the dome. The set was filled with smoke in order to obtain the sharply delineated vertical light beam. (BELOW LEFT) Krypton takes on a rosy glow and begins to erupt, as the Red Sun approaches. (RIGHT) As the planet shudders in its death throes, the starship with Baby Superman inside heads for Earth.



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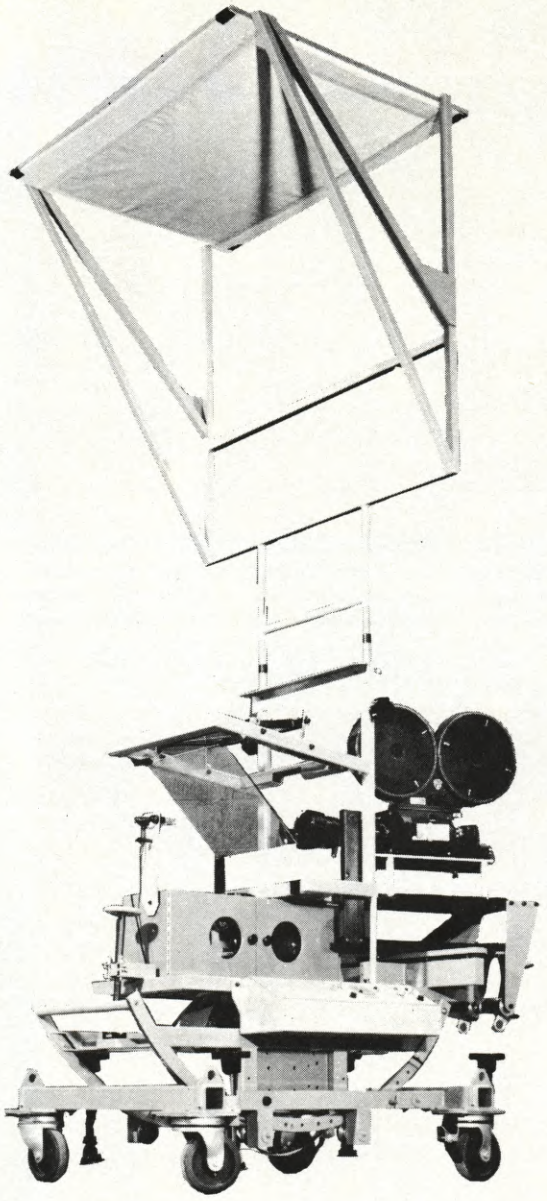
on a dimmer until it looked exactly right—but that was to the cameraman's taste, and this is exactly the same. You look through the camera and you set it to what you think is right and you are seeing it as a composite picture. This is the great advantage, in my opinion. It is so much better than adding overlays afterwards where you, yourself, have no control. You can get just the right amount and I find it an enormous advantage. In fact, it can be used as a filler, because it is almost like pre-fogging or anything like that where it gives an added exposure to the film, and increases the speed very slightly if you use a white light, for instance, and it does act as a filler. So it helps solve the problem that if someone is apparently flying, where does the light come from? One is struggling all the time to make it completely natural and yet have enough light on the actor to know who it is and what he is doing, and it gives you that sort of feeling that you don't know where the light is coming from—but it is just there. So it has been a terrific advantage.

QUESTION: Just one last thing about the front projection equipment itself. I believe you had problems in making up a large screen which was absolutely faithful and true in terms of colour and reflectivity. How did you eventually beat this problem?

COOP: I don't think we have completely beaten it yet. When you are laying front projection material on a screen which is 80 to 100 feet long, it is an extremely delicate material, and handling a roll of that length is very, very difficult indeed to get it laid absolutely creaseless and without any marks on it which are later going to impair its reflection value. The slightest bit of grease—if anybody touches it with their hand with the slightest bit of perspiration—will reduce the reflection in that area to probably 50%—which gives you what looks like a black mark. This is not new; this is part of the problem of front projection, of building a screen that has absolutely no mark on it at all—because the moment you move the camera, these marks move about the screen. In the old days, when front projection meant locking off and those marks were stationary, you were not aware of them. But the moment you move the camera, in effect that dark mark moves across the screen—or up and down—whatever you happen to be doing. Since we have been doing a lot of movements, we have had to be very, very critical of the slightest mark because it is very obvious and we haven't really come up with a complete answer. We have had a great deal of help from the 3M Company who have sent a lot of people over to discuss the problem, and they have been extremely helpful. We are getting very close to making a screen which will give us the fewest possible problems. We tried putting it up in sections, which is all right up to a point, and enables you to change small sections of the screen if they get damaged, but it is almost impossible to come up with a material on which to lay the screen that doesn't shift in changes of temperature—and the moment it shifts, you start getting ridges where the joins come and they collect dust or pick up any stray light that happens to be around and you finish up with lines showing on the screen, and once again when you move the camera, you get a straight line which travels up and down or across and it makes the material unusable. It is a very big problem.



One of the two front projection systems used on "SUPERMAN" was this Neilson-Hordell dual-screen front matte projector, fitted with the Zoptic (zoom optic) special effects device, which gives movement in depth to a subject without the subject itself moving at all.

QUESTION: The problem of reflectivity and colour balance between rolls—I believe it can even change in the same roll. How have you got over this?

COOP: Oh yes, we have had to keep very careful charts of the roll numbers. We had a reading given to us by 3M about which rolls match which, and the screens, with their help, have been laid with all these as close to one another as possible, so that if there has been a change, it's been a graduated change rather than just one strip being completely out of place. And they have been able to control this sufficiently not to give

us too many problems. We have had to keep a very, very careful check right the way through the picture. Whenever we have replaced a piece of screen that go damaged, or when the screen has been laid rigidly, these rolls have been numbered in small sections and we could always repeat that and re-lay a piece that would match. One does have the problem of time, because the moment a screen has been up for a few weeks in a working stage, the amount of dirt around in a film studio is enough to affect the reflective properties of the screen. We have had to keep the screens curtained, we keep the stage as clean as we possibly can. We vacuum clean it with one of these very large industrial vacuums. We keep the dust down to an absolute minimum in order to keep as much dirt off the screen as possible.

QUESTION: On front projection, what restrictions do you have on how much of your foreground lighting you can allow to fall on the screen?

COOP: It is essential to keep a keylight off the screen. Any actual shadow that you can see by eye will almost inevitably photograph—and, once again, this applies to our particular problem when we are moving the camera. If you have a static shot, you can lose a shadow against a particular part of the background—and if the camera doesn't move it's fine, but the moment you move the camera, those shadows become apparent. On top of that, obviously the more light that hits the screen, however slight, the more it flattens your front projection picture, and because you are enlarging to such an enormous size, where contrast is beginning to go and because you are working at low stops, it does become a problem. In certain circumstances, if you can get the key up to about f/5, f/6 or f/8, if a fair amount of light hits the screen it won't affect it, but when you are working around the f/2.8 level, and sometimes I have had to work more open than that, then any bit of filler flattens the picture.

To compensate for this, I have, in fact, lit the screen directly in order to get the effect of a halo of light or a bright area; I have actually put a light on the screen to reflect back into the camera. But, again, that is something which is an individual choice. Sometimes coloured, sometimes white, it depends on what I wanted.

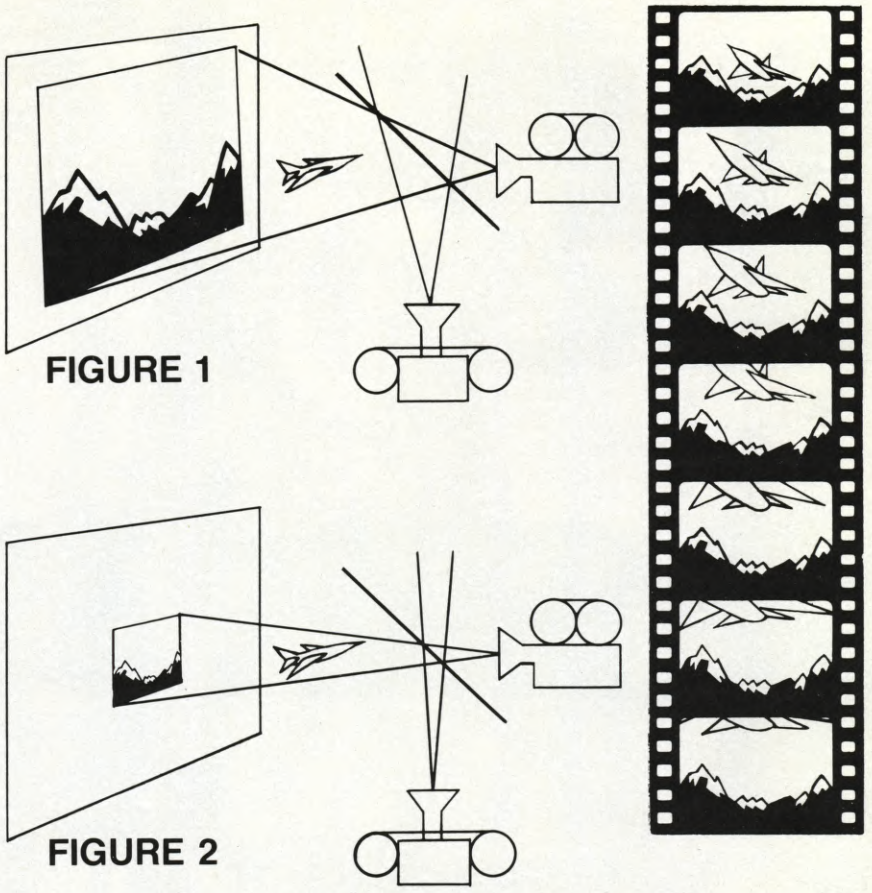
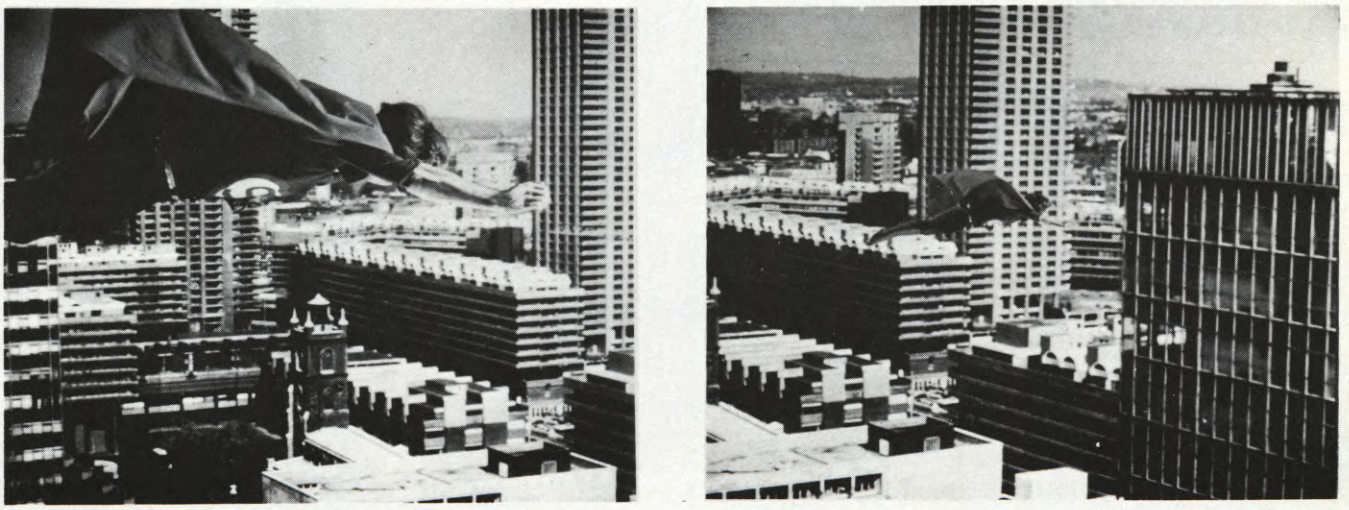


Diagram showing how the Neilson-Hordell Front Matte Projector with Zoptic device works. FIGURE 1 (top) Projector projecting wide background scene, and position of the model as seen by the camera in relation to background. FIGURE 2 (bottom) Projector projecting small background scene with lens zoomed to a longer focal length. Effect is that of model moving forward, as shown in strip diagram (right).

Frames from an early and quite crude test of the flying effect, as made possible by the Zoptic device. A gradual zoom out from a close shot of the flying figure, with the background objects remaining the same size. Thus, the foreground subject is handled independently of the background and realistic zooms of its action in relation to the background can be achieved. The Zoptic system was developed by Zoran Perisic.



QUESTION: You could put a nice red evening glow into the sky?

COOP: Oh yes. As I said earlier, sometimes you could put it on the screen above the camera and reflect it through the back of the mirror—or, if you didn't want it to come over the foreground subject, you could do it directly on the screen.

QUESTION: Just one other technical question on front projection. I think it was the Motion Picture Research Center that published tables showing the maximum distance you can have a foreground subject from the screen, bearing in mind the camera-to-screen distance, and the lens focal length and aperture. When these figures are examined they are found to relate to the depth of field, so that if you measured the distance of the camera to the foreground subject, the screen shouldn't be further away than would be carried by the depth of field. Have you found that there are such restrictions in the relationship between the camera, the subject and the screen?

COOP: Yes, this is purely front projection rules that the closer you can keep the subject to the screen, the less chance you have of getting a fringe. If you are faced with having to keep the subject a long way away from the screen, as we very frequently were, there are ways of adjusting so that if there is a fringe, it is hidden in some form or another. We found that with very close shots, the problem became greater and greater as we got closer to the actor. In fact, we cut screens to fit round the actor's body so that we could get it close enough to the back of the head, in order to do very big close-ups, because there are times when you get so close that it is almost impossible to eliminate the fringe. But when you are that close, if the body is slightly to one side or the other, you can usually bias the fringe one way or the other in order to lose it where it is not that obvious.

It also becomes an enormous problem to be able to light the actor correctly without hitting the screen with a keylight, and I finished up with the distance which worked pretty efficiently right through the picture where we kept those problems down to a minimum, but were still allowed to be sufficiently mobile with what we were doing.

In fact, going away from the camera and the projector, we were involved in developing various systems of support for the actor. Superman is a fairly small object—sleek body in tight fitting costume, apart from the cape—so there is very little to hide any of the suspension units. The problems from wires proved to be almost insurmountable, except in the extreme long shots and very dark sequences and so on, and also it is very difficult for a human being to maintain a believable attitude when he is hung from two wires—and also to do any maneuvering, because the moment they change their attitude, they lose their balance, even Chris Reeve who is unbelievably good at this flying business. His contribution was half the battle, quite frankly. Wires were a very great problem for him as well as for us. So we devised a number of other systems of mounting—I can't obviously disclose all the details of those sort of things, but he was supported in a much more rigid fashion, which was one of the reasons that we had to be so completely mobile with the camera.

QUESTION: So much for the technical side of your being responsible for the front projection. In fact you are a creative Director of Photography, and a lighting cameraman with a long string of credits of which anybody would be proud. How have you found this as a purely creative exercise away from the technicalities of losing fringes and moving front projection around?

COOP: I have been astounded by what I have learned. I have been in the business for 42 years in the camera department. I've been lighting for I don't know how long now (about 18 years), and it's incredible how little you can know about your job in this business, which is what makes it so incredibly fascinating. I really have learned the most extraordinary things during this 18 months. It hasn't really restricted, in my opinion, the creative side of my job at all. In fact, I have been faced with completely different creative problems, and once again I have been trying to convince people that this man is flying and I think I have succeeded in doing this, with help from an enormous number of other people. But this also comes down to actual atmosphere, the lighting. I've had to tie in with Geoff Unsworth whom I have always considered to be one of the top cameramen in the world, and it has been an enormous pleasure to work with him on a film—one doesn't often get the chance of working with another Lighting Cameraman at that sort of level and that has been an education. I have learned a lot from him—I have had to link into his work so that everything matches. There has

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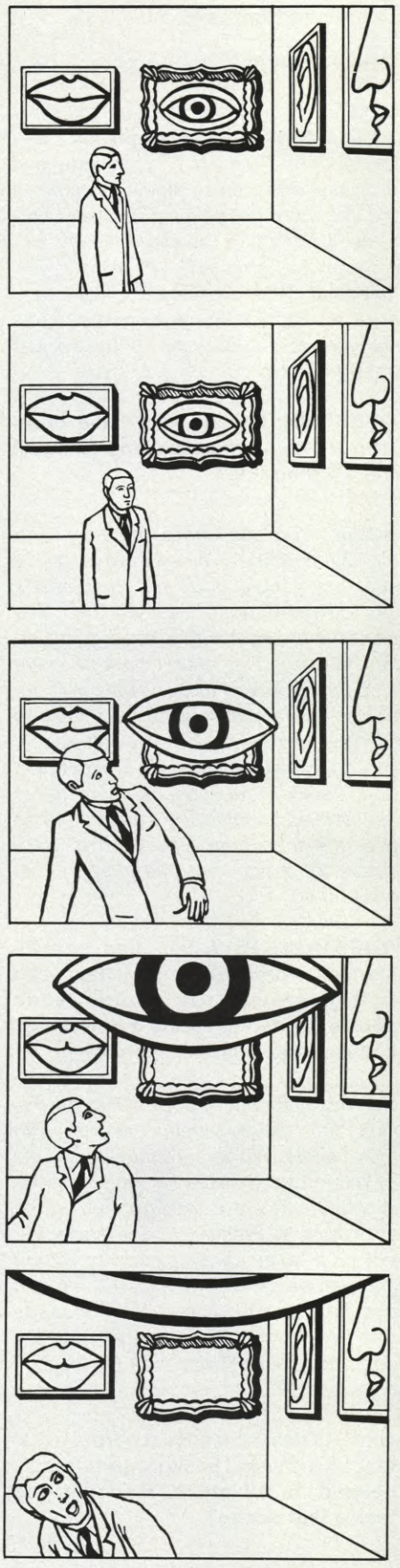

Diagram showing the effect of using the Zoptic screen in conjunction with the front projection screen. In this manner, Superman could be made to appear to zoom off the screen, straight over the heads of the audience.

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balance correct?

BOWIE: I would say that you probably do four tests in order to get the thing nearly right. Then you find that you have to make little adjustments–perhaps in the line-up of the painting or a slight alteration of tone in the paint, which you just cannot correct by lighting. Or you may have to make an area slightly redder or bluer. So it could, on an average, go six times to the laboratories before you get it finished.

QUESTION: Do you ever have problems if they photograph movement on the dividing line?

BOWIE: You can't have movement on the dividing line. You've always got to see that people don't put their heads "through the matte", as we say. You can't have a shot with a head going up into the sky. The actors have to have something behind them all the time, because it's very difficult to marry sky to sky. You have to have a very soft edge if you do that–or put clouds in when you don't really want them. If there is an accident and somebody's head does go over the area, then you have to rotoscope the matte–but that is very time-consuming.

QUESTION: Have you had any instances where Superman has been flying through the clouds when you've wanted to create a differential between the layers of clouds?

BOWIE: They have cropped up on this film, but I haven't been involved with those shots. We've shot moving clouds as background plates for the sequence in which they are looking out of the cockpit of the President's aeroplane. We did multi-layer spray clouds on cloud glasses which we moved–the nearest one faster and the one farthest away with no movement–so that you get the right movement in depth of the various planes of clouds.

QXESTION: The Ice Palace from a distance, with sky background—that, I believe, is all glass. How did you tackle that scene?

BOWIE: Well, we started off on the 007 Stage, photographing everything on the original negative–putting our glass matte up in front of the camera. But because they change set-ups and things, in the end two-thirds of the cuts will be done on original negative, but for the others we will have used dupes. The reasons are purely technical, action-wise, but have nothing to do with the matte shots.

Les Bowie not only has partially shot composite scenes for SUPERMAN—PART II "in the can"—he's got them in the fridge. Refrigeration helps protect the latent images from deterioration over periods of time. Les also usually has a bottle of his excellent home-made wine in the cooler to keep the film cans company.

QUESTION: You had to simulate an atom bomb explosion, I believe?

BOWIE: Yes, we did. I imaged the explosion in a very similar way to the simulation of those very weird clouds they had in CLOSE ENCOUNTERS.

QUESTION: How did you do that?

BOWIE: We did it in water.

QUESTION: How did you do it in water?

BOWIE: We had very clear water and exploded colour into that water, shooting at high speed. It looks marvelous. Viewing it from outer space, when you see it as though you are looking down onto it, you see this "poof". It's good–everybody seems to think so, anyway. It looks like an atom bomb cloud.

QUESTION: And yet it all takes place underwater?

BOWIE: Yes.

QUESTION: One of the reasons that Dick Donner is so delighted with your efforts on this film is that you were the person who suggested how to make

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minutes on the trampoline, roadwork in the morning, and a muscle-building high-protein diet.

Meanwhile Reeve was developing not only his biceps, but his interpretation of the dual role. The caped hero, standing hands-on-hips as bullets glanced off his chest, was only one aspect of Superman.

"But there is more to him than that," says the young actor. "In a sense, he is a stranger in a strange land, a solitary man with extra-terrestrial powers, trying hard to fit into his adopted planet.

"He has warmth and a fine sense of humor, even about his own super-human strength."

The search for Superman/Clark Kent was matched in its intensity by the hunt for Lois Lane. She had to be bright, spunky, pretty, and capable of projecting a fond indulgence with the fumbling Clark and a zesty romance with his steely alter-ego.

To the dismay of some of Hollywood's best known actresses, and their agents, the nod finally went to Margot Kidder, who has been directed by some of the industry's finest craftsmen, including Norman Jewison, Robert Altman, Brian de Palma and now Richard Donner.

A distinguished international cast completes the roster of citizens from Krypton, Smallville and Metropolis.

Susannah York, British Academy Award winner, American "Oscar" nominee and "Best Actress" at the Cannes Film Festival is the Man of Steel's real mother, Lara on Krypton.

Glenn Ford and Phyllis Thaxter are the Kents of Smallville, who—in Ford's words—"try to give their amazing foster-son a normal American upbringing."

Jackie Cooper, celebrating a fifty-year screen career which began when he was a three-year-old scene stealer, is Perry White, no-nonsense editor of the Metropolis Daily Planet.

Valerie Perrine, dressed to the nines, is Lex Luthor's fetching playmate. "She's not really evil, just sort of dumb," says Valerie. "She can't resist Lex or his weird schemes."

Ned Beatty, nominated for an Academy Award for his performance as the coldly logical tycoon in NETWORK, is Otis, dim-witted aide-de-crime to Lex Luthor.

Maria Schell, winner of seven German "Oscars" and the flawless beauty of THE BROTHERS KARAMAZOV, is Vond-Ah, a Kryptonian scientist as brilliant as she is devious.

Trevor Howard and Harry Andrews, two of England's most enduring stars, are

elders of the planet Krypton.

Terence Stamp, "Oscar" nominee for his disturbing portrait of THE COLLECTOR, is Superman's cunning adversary.

The behind-the-scenes credits have the same professional lustre.

Production designer John Barry came to SUPERMAN after winning an Academy Award for STAR WARS, and industry-wide acclaim for A CLOCKWORK ORANGE and LUCKY LADY.

His favorite scene? "The destruction of the planet Krypton. It was one of those rare times when everything we imagined would happen . . . actually did." The most challenging task? "Designing Superman's Fortress of Solitude in the Arctic. It had to be like no other movie set in history."

Composer-conductor John Williams is a three-time Academy Award winner for FIDDLER ON THE ROOF, JAWS and STAR WARS. Oddly enough, when his STAR WARS score won last year's Oscar, the man he had to beat out was . . . himself (for CLOSE ENCOUNTERS OF THE THIRD KIND).

Still another Oscar winner is Geoffrey Unsworth, BSC, director of cinematography, whose award was for the decadent images in CABARET. Other hits which had displayed his visual virtuosity include BECKET, 2001: A SPACE ODYSSEY and MURDER ON THE ORIENT EXPRESS.

Costume designer Yvonne Blake's "Oscar" stemmed from the stylish period "look" of NICHOLAS AND ALEXANDRA. A creative "time traveler," she also fashioned the costumes for THE THREE MUSKETEERS, ROBIN AND MARIAN and JESUS CHRIST, SUPERSTAR.

To edit the film, Donner called on one of his gifted cohorts from THE OMEN, Stuart Baird, who—at the ripe old age of thirty—includes, amongst his credits, such hits as Lindsay Anderson's IF and Ken Russell's THE DEVILS and TOMMY.

The Salkinds and Spengler take pride in the creative team assembled to make SUPERMAN.

"We approached people we felt were the best in the industry at what they did," says Spengler. "Their reaction to the name 'Superman' was fascinating. One sensed it was an idea . . . a project . . . whose time had come."

Adds Ilya Salkind, "I've been told that SUPERMAN has the potential to be one of the greatest films ever. If that happens, it's because of a magic that's been there since 'Superman' first appeared in print. Everyone wants to fly, to be free, to be strong enough to challenge injustice.

"Everyone . . . for at least one moment . . . wants to be Superman." ■

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magazine like *American Cinematographer.* Bob Fosse wanted Liza to look a bit rough the next morning and he had a terrible time with Geoff, trying to make Liza look not quite as beautiful as Geoff wanted her to look. I mean, Geoff saw every woman as someone who should look beautiful and would try harder than anyone else I've ever met to make them look that way.

There were many cameramen shooting in other units of SUPERMAN, as anyone will note who can stay to the end of the credits. Geoff was in contact with them, but never over-instructed them because, being the type of person he was, he never wanted to put too much pressure on anyone. But obviously there were times when sequences had to be left by us, as a first unit, and continued by a second unit. There were other times when Denys Coop's unit, which was an entity on its own, continued happily photographing whole sequences.

Of the many cameramen who contributed to SUPERMAN, I must say a special word about Alex Thompson, with whom Geoffrey was very impressed, because Alex matched Geoff's stuff to a T. I think any cameraman reading this article will realize that it's harder to match somebody else's work than to do original work. I know how impressed Geoffrey was with the way Alex matched his work, and he himself said to me that he felt that Alex very often improved it. I know that Geoff would have liked me to say that.

There are several other cameramen on the picture that I could talk about for hours, but Geoff did have a special affection for Alex because of the way he obviously tried so hard to match his work.

Since Geoff passed away before he could do so, I have been given the task of grading (or "timing," as the Americans say) SUPERMAN. Geoff was always very involved in timing, as any cameraman obviously must be. It is no good spending months of your life getting things exactly as you want them only to leave the finishing to someone else, because the chances are that their ideas might be somewhat different than yours, or slightly less daring.

Over the years I've sat in with Geoff on many timing sessions, but this will be the first time—and I must say that I'm extremely worried about it—that I am going to take some responsibility for making decisions. I have, I know, people who will help me—like Les Ostenilli of Technicolor, as well as Denys Coop, who did some magnificent work on SUPERMAN and who had a unit of his own for the

whole time. He has already started timing some of the reels and I will do the rest. I know how Geoff would have wanted it to look and everything that can be done *will* be done to make sure that Geoff's work *looks* like Geoff's work.

Geoff's contribution to any and every film that he worked on was that everyone knew that the results would be as good as humanly possible. But apart from that, Geoff had a unique "presence"—and I wish I could think of a more precise word—but it was a presence on a set that used to give everyone around him confidence. I mean, if you look at a picture of Geoff—even if you haven't worked with him—you can see that, and directors, actors and actresses always felt that they could go to Geoff and lean on him. Many of them did over the years, and many who read this article will spend a quiet moment remembering those times.

Since he has been gone, I have spoken to perhaps 15 directors we have worked with and all of them have swapped stories with me about: "Do you remember this?" or "Do you remember that?" But what all of them have talked about most was Geoff's strength. Geoff was always there. He was always there first thing in the morning, and he was always there until the end of the day. He would never miss rushes. Anyone could phone his room, if you were on location, and have a chat.

Geoff had a presence that was there then—and, I think, will be with us for quite a long time. ■

(EDITOR'S NOTE: Rarely has a man been more beloved by his co-workers in the world-wide filmmaking community than was Geoffrey Unsworth, BSC. He was a gentleman in the most literal sense of the term, and an inspired artist of the camera. He was also, although quite shy, a very warm, witty and compassionate human being. It is to the memory of this very special man and his rare combination of qualities that this issue of American Cinematograher *is affectionately dedicated.*

A trust fund has been set up to complete the education of Geoffrey Unsworth's three children. Anyone wishing to donate should do so to: Messrs. Rubenstein & Callahan, (Unsworth Trust), 6 Raymond Buildings, Cray's Inn, LONDON, WC1, ENGLAND.)

FLYING SUPERMAN WITH FRONT PROJECTION
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been no problem changing from straightforward production shooting to process, and there has been a lot of that throughout the picture. But the actual creation of an atmosphere in the sky is something one often doesn't get faced with–a man flying above a town at night–and to reproduce the right sort of feeling that, in fact, I discovered by flying over New York in a helicopter–the sort of level of light that ycu would get from the city itself–the sort of light that you would get, where it would come from–colours and so on–that creative side of it has been enormously exciting. And Richard Donner, the Director, has been a very hard taskmaster who wants perfection, quite rightly so, but gives one enormous encouragement to go for exactly what you feel is right and to keep doing it until it is right. So between the encouragement from Dick Donner and the opportunities raised by this subject, I don't think I have lost from the creative side anything at all. I have gained an enormous amount on that side as well, I think, and thoroughly enjoyed it, too.

QUESTION: Do you want to talk about any particular shots which gave you most satisfaction in achieving? For instance, what would people, even within the industry, even fellow Lighting Cameramen, not realise was front projection when they asked themselves, "How was that done?"

COOP: I am fairly confident that in regard to 80% of the material that is in the film, none of the front projection will be obvious front projection. Obviously, when people see a man, and at times a man and a woman flying, they know it's a process of some sort. I think it is going to be extremely difficult to put your finger on what is in fact front projection. Obviously, everybody knows that front projection is to be used on a film so they are going to accept the fact that that is what it is. I am probably one of my own severest critics–but if I feel that what I see on the screen is a man and a woman flying through, in and around New York, etc., and it is completely convincing–I think I have achieved what we have all been attempting to do right from the word go. I was approached by a member of the studio the other day who came up to me and said, "I saw a sequence that they were dubbing the other day of SUPERMAN in New York, when he flies down and lands on the pavement and burrows through the earth." He said, "How on earth did you manage to control

the people in New York?" And this is a technician at Pinewood. I said the whole sequence was shot on 'A' Stage and if I can convince a technician that he has just seen some film shot in New York, I am very happy.

QUESTION: Who shot the plates?

COOP: I went to New York early during the production to set up the plate shooting unit. Wally Veevers and I went over there together. Wally was in control of the 8 x 10 steroptican plates and I was in charge of setting up the 35mm moving plates. I think it is very important in a project like this, where the cameraman is very much responsible for the overall result, that he is actually there and if not, is very closely associated with the cameraman who is going to shoot the material for him in order to co-ordinate the movement on the plate with the movement that is going to be put in front of it months later. We have learned more about this as we have gone on. It is terribly important in order to achieve the optimum result that the maximum effort go into the plate–which means that you have to discuss the shots very, very carefully with everybody–the Director, the Art Director, everybody concerned in the first place–and with that in mind, you go out and shoot a plate envisaging what is going to go in front of it. It is not just a case of setting up a camera and exposing some film. There is an enormous amount of movement involved–if you can imagine flying over New York, photographing from a helicopter a man who is doing a loop the loop over the city. You have to create that situation with the background before you apply the foreground–and this is an enormous part of creating the illusion in the end. We have found ourselves faced with situations because we have been learning, and we have wanted to do things where we couldn't go back to New York and reshoot plates. We have had to create our own New York with cut-outs and models with the help of Colin Chilvers, who contributed an enormous amount to models that we shot on the Lot at Pinewood–models of New York, with traffic moving on the street–traffic moving over bridges and so on. We created our own plates with an enormous amount of movement and the results have been probably as good as material shot in New York itself. But, basically, because it is terribly important that the background have the correct movement, you can't put a background up and say, "Now, what are we going to do in front of this?" You have got to sit down and discuss it, work it out, and then go and shoot the background

with all that movement incorporated. It is terribly important that the cameraman responsible be involved in that discussion, and I was very fortunate in contacting a cameraman in New York called Bob Bailin who worked with me while I was out there. I persuaded the Company to bring him to England. He sat in on a week's solid discussions on plates that were needed and he went back to New York and shot plates that were absolutely to the frame what I had asked for, and have proved to be 100½ successful. But only because of the preparation and the thought that went into it.

QUESTION: So what are you going to pull out of the hat for SUPERMAN II?

COOP: It is difficult to know what we are going to pull out of the hat as of this moment, but we are faced with a situation where instead of one person, and in some cases two people flying—we are faced with four people at once taking part in a fairly exciting, hectic sequence over New York. I don't think by any means we have come up with all the answers. I think we are a long way towards making it more exciting, more successful than Part I. If we don't make it better, it means that we have learned nothing, and I am confident that it is going to be a lot more exciting than Part I. We have got to develop our equipment through our experience on Part I. We are going to have to expand quite considerably. I think we are going to get into computers in order to be able to create the illusion of four people on the screen at the same time, traveling in various directions. It is difficult at this stage to say exactly what we are going to do. I think that when I started Part I, I had no idea what I was going to do. I thought I knew what was going to happen and I have been absolutely astonished. I know that by the end of Part II I am going to be even more astonished.

QUESTION: Finally?

COOP: This is something that I should have mentioned earlier, one of the people who has been closely associated with me and who has worked with me on a number of films where I have been Director of Photography, is my Operator, John Harris. His contribution to the development of the machinery itself and to the actual manipulation and creation of the illusion of flying has been really quite incredible. He really has been my right arm, and I wouldn't like any interview or article to go through without his name being mentioned as an enormous contributor. ■

out the negative and rephotographing a drawing or painting or glass shot?

FIELD: We use this system quite a lot, especially on ultra-long shots where we have to add buildings and ice palaces and that sort of thing. Les Bowie, our matte artist, has painted lots of shots this way and we've combined the elements—sometimes on original negative. It's an old technique, but it requires a lot of control to make sure that records are kept of the slates and that sort of thing. We have done other shots using the old three-colour system (red, blue and green) and making masters at Technicolor and then recombining them onto 5247 with a painting. That has been extremely successful.

QUESTION: Do you have your own matte room?

FIELD: Yes, we built a small one when we realized that there would be so much work on SUPERMAN that it would be worth having our own control. It has proved very useful. We combine a standard Mitchell camera with a bi-pack system, using a white backing as a printer light and then controlling the whole thing on three-colour separations. It has worked out very well.

QUESTION: In that case, is it better to use three-colour separations?

FIELD: You have to. You can't use an interpositive system. The only other technique would be an interpositive/internegative system. But interpositive is not a photographic stock; it's a duplicating stock and extremely slow. It doesn't have the contrast range that we sometimes want and you don't really have enough control over its colour to match in another colour with it. In other words, the painting, which has certain colours, has to be matched very accurately and the whole thing gets terribly delicate. The only way you can control that is to do it on original negative or make three-colour separations (the old system) and match them all together. I like the dupes from three-colour separations. I think they are still some of the finest dupes made today.

QUESTION: How do you use the three-colour separations when you are shooting bi-pack?

FIELD: You put the blue master in the camera in bi-pack with an original nega-

tive and print it—using, of course, the appropriate narrow cut filter to print only that colour. Then you do the same with the red and green masters, until you have built up an exposure through the three colours. Then you re-expose a fourth time (single-pack), photographing a painting or model or whatever it might be, to combine the whole lot together. The matte work involved is another delicate little thing—whether you go soft-edge or hard-edge, for example—all the things which, after years of experience, you have learned how to cope with. They vary from shot to shot, because each shot obviously has its own limits and photographic qualities.

QUESTION: Wouldn't the use of the three-colour separations give you much greater colour control?

FIELD: Oh, yes—tremendous colour control, very delicate. I'm a firm believer in it.

QUESTION: You said at the beginning that anything that is not first generation comes to you. What percentage of the film do you estimate has gone through your hands?

FIELD: It's difficult to estimate that at the moment, because we aren't finished, but I should think that well over 50% has gone through our hands.

QUESTION: That's 50% that's not first generation?

FIELD: Yes—I'm afraid so. One realizes that when you come to the negative cut and you see the vast amount that we have had to do.

QUESTION: In the end, the prints are made off CRIs for release. Do you ever duplicate your work so that it can match up with the CRIs, or do they CRI everything?

FIELD: We have to CRI entire reels. There is no other way you can do it. This is why I am always concerned about quality, because there is always a drop at that stage—and if there is a drop before that stage, of course, it gets unbearable. So quality is the thing one has to fight for. It would be easy to create special effects by making dupe after dupe of the same scene, but when one has to combine everything in one dupe (in order to have only one generation drop), that involves a lot of skill, a lot of hard thinking, a lot of tireless work. There are very few double dupes in this picture. There are one or two which we had to do because there was no other al-

ternative.

QUESTION: I believe you have used the system of soft-brush animation on this film. What is meant by that term?

FIELD: It refers to a system that is a cross between cell animation and full animation. In other words, an artist animates with a brush in order to achieve an airbrush quality, to create various effects, such as streaking and high-speed trails and that sort of thing. It's time-consuming and very delicate (which is why I like it), but we have found it very successful for limited use. One has to consider where to use it very, very carefully. We have avoided direct cartoon animation, as such, anywhere in the picture, because of its unreal look. But we did come up with this airbrush look, which has proved useful in certain cases.

QUESTION: On what sort of scene would you use the airbrush technique?

FIELD: When Superman is travelling from Point A to Point B at extremely high speed—usually up in space—we have adopted this technique. It has limited use, but if it is done delicately, it can be extremely effective. ■

MATTES AND COMPOSITES
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Superman's cape fly. Is that correct?

BOWIE: Yes. Well, I saw at the very beginning that there was going to be a hell of a problem with Superman's cape, because it meant that wherever he went you had to have a huge wind machine—so I thought it would be a very good idea if we made his cape flap up to look as if it was being blown by the wind—but to do it by means of sort of motorized fishing rods, operated by radio control. He carried the batteries. Everything went with him, but we could vary the speed by radio control.

QUESTION: What other particular contributions have you made to this production from your experience in so many aspects of special effects?

BOWIE: Well, as I've said, all the way through this film Richard Donner has always insisted that if anybody had any ideas they should shout them out loud—and most people have, including me. A lot of those ideas have been tested, and many of them have been used.

QUESTION: It's been a super get-together film, hasn't it?

BOWIE: It has. I used to rather enjoy the get-together's in Dick's office.

COMMENT: Dick Donner told me that you make very good home-brewed British beer.

BOWIE: He seemed to enjoy it. ■

ASC CINEMATOGRAPHERS AVAILABLE FOR SEMINARS, LECTURES, INFORMAL DISCUSSIONS AND QUESTIONS & ANSWERS SESSIONS

The following members of the American Society of Cinematographers have indicated their availability to appear for seminars, lectures, informal discussions and questions and answers pertaining to motion picture and television photography, lighting, special photographic effects and production in general: L. B. "Bud" Abbott, Lloyd Ahern, Taylor Byars, Stanley Cortez, Victor Duncan, Linwood Dunn, Daniel Fapp, George Folsey, Richard Glouner, Burnett Guffey, John L. Hermann, Gerald Hirschfeld, Winton Hoch, Michel Hugo, Richard Kelley, Milton Krasner, Vilis Lapenieks, Andrew Laszlo, Ernst Laszlo, Jacques Marquette, Richard Moore, Sol Negrin, Frank Phillips, Owen Roizman, Joseph Ruttenberg, Howard Schwartz, Richard Shore, Frank Stanley, Alan Stensvold, Mario Tosi, Ted Voigtlander, Harry Wolf, and Vilmos Zsigmond.

Arrangements as to availability and other details are to be made directly with the individual A.S.C. member. For further information, contact: American Society of Cinematographers, P.O. Box 2230, Hollywood, California 90028. Telephone: (213) 876-5080.

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miniature outside you can get a much better effect. Of course, in England, when you first take it outside you think it's fantastic. You've got all the light you want and the shadows are all running parallel because the subject is lit only by the sun. But when you come to do the shot, the sun has gone in and it's cloudy.

For SUPERMAN we had the opportunity to shoot the San Francisco bridge miniature on a stage, but I decided that we would do it outside and take a chance on the weather. We wanted grey skies, rather than strong sunlight, and it just happened that we did get grey skies. If the sun had come out the shot would have been useless. I feel that sometimes you just have to take terrible chances and cross your fingers and hope that the weather will be exactly as you want it.

Some of the miniatures we use are very expensive. I would estimate (and I'm just taking a wild guess here) that the tanker in the James Bond film cost about $40,000. It was quite a monster—63 feet long—and required a crew of three to operate it. But the main reason that it was so expensive was that it wasn't a conventional boat. In the film the front of the tanker opens and it sails over nuclear submarines and just sort of gobbles them up. Because of that, the construction of the tanker had to be like that of a catamaran and only the last so-many feet of it was a complete boat.

Handling expensive "toys" like this adds up to an enormous financial responsibility, which I don't simply take in stride, because if you get to a point where you don't worry about such things, you're inclined to become too *blasé* about them. I feel that if you are keyed up over the cost factor, realizing that you have a very, very expensive model in front of the camera, your mind starts working a little faster. You become aware that (in the case of some pictures, at least) if the miniature shots don't look real the picture could be a washout, because this particular toy is what they've centered the whole picture around. In the case of the Bond picture it happened to be a tanker. If you take the tanker out of the film I wouldn't say that you haven't got a film, but you've certainly got a great big gap—and I don't know what you would replace it with.

In the case of the Golden Gate Bridge miniature which we built for SUPERMAN, a danger was posed by the very, very high winds we had to cope with during shooting. These were especially dangerous because the bridge was very delicately made. The entire super-

structure underneath had been pressed out of brass and had only been tacked together in places, the reason being that we didn't want it to be built so solidly that we couldn't destroy it. We didn't want to use really powerful explosives. We wanted to use something that would create a nice visual effect—but a *soft* explosion that would dislodge portions of the bridge without blowing the whole thing to smithereens. So this bridge was just tacked together and there were several nights when we had such high winds that we would rush out to the lot first thing in the morning to see if the bridge was still intact. Finally, during the last week and after we had shot everything that we needed, a terrible gale caused the final part of the bridge to collapse.

I think you just have to take chances on certain things. You cover yourself as best you can, but there are occasions when, in order to get the shot, you have to take a gamble in one way or another. When you come to destroy something, it only takes one explosion that goes wrong to completely obliterate the camera's view and the bridge, or whatever it is, falls down without the action being recorded on the film.

In situations like that, of course, you set up other cameras almost side-by-side with the first. Often I put another camera right alongside the one that is taking the master shot and, if both cameras work perfectly, you end up with a lot of footage, but you find that the editor can usually use pieces of each shot constructively. You always stick as many cameras as you can on an especially tricky shot. The most I used simultaneously for SUPERMAN was six cameras, on the dam bursting sequence. Of course, when you tell the production people that you want six cameras they go crazy, but once they see all the shots they don't argue anymore.

On that dam sequence, because of all the water flying around, we used rain deflectors in front of the lenses, but when we told Samuelsons that we needed *three* of them it was their turn to go crazy, since they had only one. Of course, they quickly made up two more specially for us, including one that was handholdable. Those rain deflectors worked just great. There was one camera that we had placed very low, and when the dam burst, the first onslaught of water just obliterated its view. But the rain deflector cleared it within seconds so you could see the rest of the action. It looks good in the picture because it gives the impression of a huge tidal wave crashing over the camera and blanking out the image for a second or two. Then it clears and you can see the remainder of what's happening.

One thing I've discovered as the result of using multiple cameras is that very often the camera that you think is going to give you the best shot doesn't actually do so. You stick another camera slightly off to the side for what you think will be a good cutting shot, only to discover when you see rushes that the "throwaway" camera has captured something on the film that looks fantastic.

I thoroughly enjoyed working with Dick Donner on SUPERMAN. I think that Dick is a fantastic technician. He understands all of your problems and even though he may not comprehend all of the mechanical details (because they're too complex to start explaining), he doesn't question anything that you do. I don't know anybody who could have done the picture better than Dick has done it, because he has this sort of enthusiasm that never dies.

There are times when you've shot something and you see it at rushes and you're not thrilled to bits with what you've shot because you know you could have done better. If you've got Dick sitting beside you he understands this sort of thing. If it's not quite right and you start explaining to him, he'll say, "Well, it's got to be good and if you're not happy with it, do it again." On a picture like SUPERMAN, if you are going to make it into a good picture, you've got to be able to do that sort of thing. Otherwise, if the film isn't good once it's finished, all the money you have spent will have been wasted. So you need somebody like Dick Donner who can keep the whole crew together and keep everybody enthusiastic, because there are times when you can get so low on a picture like that. If you have got a lot of complicated shots to do, you really have to have somebody you can run to and pour out all your troubles to. When that happens, Dick doesn't look at you as if to say, "Well, what an idiot. Why did I employ him?" He sticks by you. ■

(EDITOR'S NOTE: The foregoing article was extrapolated from discussions between David Samuelson and Derek Meddings.)

DIRECTING THE FILMING OF "SUPERMAN"
Continued from Page 69

DONNER: Well, I will say that Denys Coop deserves as much credit as any other human being in this world for bringing so much to the flight sequences of SUPERMAN. I mean, he is just a genius. I am terribly provoked and excited by him—and I think he's an incredible man.

COMMENT: He's a top-flight Lighting Cameraman in his own right—but here he was doing a sort of special effects job.

DONNER: It's more than a special effects job. It's a process that was totally in its infancy—perfected by us. Denys came to me when we were about to throw out a device that we had been experimenting with and begged me to put more time and money into it, because he knew he could make it work. I had trust in him, and he did make it work. He conducted total experimentation day after day, trying and trying—until one day we sat in the theater watching dailies and saw the final result. I nearly cried when I saw it, because it had been such a long, hard pull. It was so exciting that I just couldn't believe it.

QUESTION: You used both the miniaturized front projection rig, as well as the system with two zoom lenses?

DONNER: We used both. The particular application was planned quite carefully for whatever the problem was within a specific flying shot. You made the observation that Denys was photographing special effects, but he was actually filming dramatic scenes. In addition to capturing aerial acrobatics on film, he was delivering a dramatic moment, a moment that had to be lit and planned to be as dramatic as if it were taking place in a room or an automobile or wherever. But the lighting was ten times as difficult for Denys, because he had unique light balance problems and exposure problems and those god damn machines would never work right when you wanted them to. But while coping with all these purely technical problems, he still had to deliver to me the lighting that fitted the dramatic mood or situation. Sometimes the combination of dramatic and technical demands was just incredible—such as in the sequence where Superman first meets Lois Lane. There was so little light that Denys had to shoot at 8 frames a second and the actors had to slow their movements down to one-third normal. There were so many days that we had to reshoot and reshoot

and reshoot until we got it right.

QUESTION: You started to tell me earlier on how, in the beginning, all of the technical functions were sharply departmentalized. Could you follow through on that train of thought?

DONNER: Yes, they were departmentalized, just as in any normal motion picture, and it became my responsibility to coordinate all those separate functions. Every night there would be meetings in my office with drinks and everybody just sitting around and rapping—because there were no answers. There was nothing on paper to guide us in what we were doing. Little by little departments were totally eliminated and everybody started to work in each others' departments. It became the most homogeneous group of filmmakers that I've ever had the good fortune to work with in my life—and that has ever been organized into a motion picture crew, in my opinion.

QUESTION: Does that include the crews you've worked with in America?

DONNER: I think that America has probably the finest motion picture production facilities and technicians in the world. Yet, in all honesty, I must say that there's no way that SUPERMAN could have been made in any other country in the world except England. The reason for that is that there is still a studio system in America. Universal Studios is a major operation. The Burbank Studios is a major operation. Paramount has its own facilities, also. But the point is that England is free-lance and to get all these top-grade technicians under one roof in America would have been impossible. I could not have gotten the best matte painter from Universal, the best special effects man from Warners, the best miniatures man from someplace else. These people would have been busy working on projects at their home studios. But in England I can pull the people I want from anywhere and put them together under a free-lance system. There's nothing wrong with the American system; it has turned out some great films. All I'm saying is that it wouldn't have worked in this case. I would have had to make too many concessions.

COMMENT: It does seem that here in England you've picked off the cream of the technical talent.

DONNER: Yes, and they were all free-lance. We brought people into Pinewood Studios who had never worked

there before. Nobody argued. Nobody stopped us. Pinewood gave us the best they had, and when we needed other people we just brought them in. Except for the actors and Associate Producer Charles Greenlaw from Warner Bros., I was the only American on the entire project. I said earlier that Christopher Reeve was given to me by God, and so was Charlie Greenlaw—because there were a lot of problems on this film that had to do with the lack of knowledge about how to make it. What was needed was production knowledge and intelligence and an observance of film-making procedure that had nothing to do with the special skills of the crew. So when Warners took an active interest and Charlie came over, that changed the whole aspect of the production.

QUESTION: Geoffrey Unsworth was the Director of Photography on SUPERMAN. Does that mean that he did all the lighting except for the front projection and special effects sequences?

DONNER: He did it all—even though we had many cameramen on the picture. When we reached the point where we thought we were going to finish on a certain date, we gave Geoff the freedom to take another picture—which he did. Then I realized that I still had some things that I had to shoot. Geoff just hated to leave the company before the final shot, yet I could not offend the people he had taken the job with. But at that point we had finished the major portion of the picture. Geoff did all of that, but we had other cameramen shooting in other units.

QUESTION: What was the most units you had shooting at any one time?

DONNER: Six or seven in England and two in the States, but Geoffrey Unsworth saw everybody's dailies, and we would ferry him in my little cart to the miniatures stage, to this stage, to that stage, while they were striking a set or doing something else. He would sit with each of the cameramen and give them that Geoff Unsworth input, so that the whole picture has an overall look of Geoff. There was never the feeling of his infringement on anybody. They anticipated his visits, hoped for them and were delighted when he came on the set to give his input. I ran his little legs off from stage to stage, and Geoff's atmosphere, Geoff's diffusions and Geoff's desaturations are in all the shots. What you see on the screen in the final cut does not come from anybody else's head but Geoffrey Unsworth's. ■

INDUSTRY ACTIVITIES
Continued from Page 20

Silver Hugo.

ORSON WELLES SHOWS UP AT FESTIVAL!

Orson Welles was present . . . in spirit and on film, in a specially prepared film message to the 14th Chicago International Film Festival and its Founder and Director, Michael J. Kutza. The 15-minute film is a love letter to Chicago, the arts, the cinema and to the millions of people who have been touched by his genius since the filming of his masterpiece, CITIZEN KANE.

JOHN CARPENTER AWARDED

A Special Silver Plaque went to American director John Carpenter, whose "ASSAULT ON PRECINCT 13" and "HALLOWEEN" were invited Festival entries. The Chicago Festival, known for discovering directors (Martin Scorsese, 1966; Jan Troel, 1967; Armando Robles Godoy, 1970; etc.) awards Mr. Carpenter for the promise of his talent. He is the one to watch in 1979.

MOVIE MOVIE ADDED TO FESTIVAL SCHEDULE

Director Stanley Donen's long-awaited spoof of the 1930 and 1940s motion pictures proved to be a fantastic audience pleaser at the Chicago Festival November 18. The film is a fabulous vehicle for the talents of George C. Scott, Trish Van DeVere, Eli Wallach and Harry Hamlin. MOVIE MOVIE received continuous applause after every musical number, and a standing ovation at the end. A Warner Brothers Release.

EXPANSION IN '79

Executive Director, Suzanne McCormick announced plans to expand showings in 1979 for young people and senior citizens during the 15th Chicago International Film Festival. In addition, she stated that there will be a month of screenings of short films all over Chicago FREE both before and during the Festival. Attendance at these special events has been growing each year, and we plan to involve a number of community organizations in presenting special programs for the public. ■

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MECHANICAL EFFECTS
Continued from Page 70

that you're never quite sure what it's going to look like until you see it on the screen—and I must say that I was pleasantly surprised by it. At other times, you are doing a shot that you feel is going to be the most simple shot in the world and it turns out to be the biggest nightmare you've ever come across in your life.

It has been quite an experience being in on the production of SUPERMAN. The first script that I read absolutely terrified me, because I was growing up at the tail end of the Superman era and going to see Superman at the Saturday morning pictures at the age of 10 or 11 (I'm 33 years old now). Even though if I were to go back and see them now I would probably pick as many holes in them as I could, I remember them as being incredible at the time. So trying to match up to that mental image of what SUPERMAN should be on the screen—and having to get down to the nitty-gritty of the nuts and bolts and bits of iron and hydraulic pipes and so on—it seemed that I had a formidable task in front of me when I first read that script.

It's the kind of responsibility that if you thought about it too much, you'd opt for being a bus driver or something. You could never cope with the responsibility of what is in front of you. But with a good team of technicians backing you up, you begin to feel that, some way or other, you are going to get to the result that the director wants.

I think that having a director like Richard Donner who is willing to bend with what you can physically do is of the utmost importance. If you turned to him and told him that you couldn't do a certain effect because there is just nothing in the world made to do that, he would understand—whereas, some other director would say, "You're the special effects man; you do it."

In that respect, Richard has been marvelous. ■

(EDITOR'S NOTE: The foregoing article was extrapolated from discussions between David Samuelson and Colin Chilvers.)

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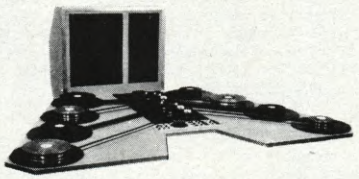

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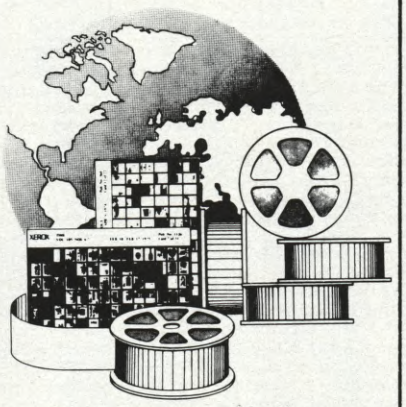

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